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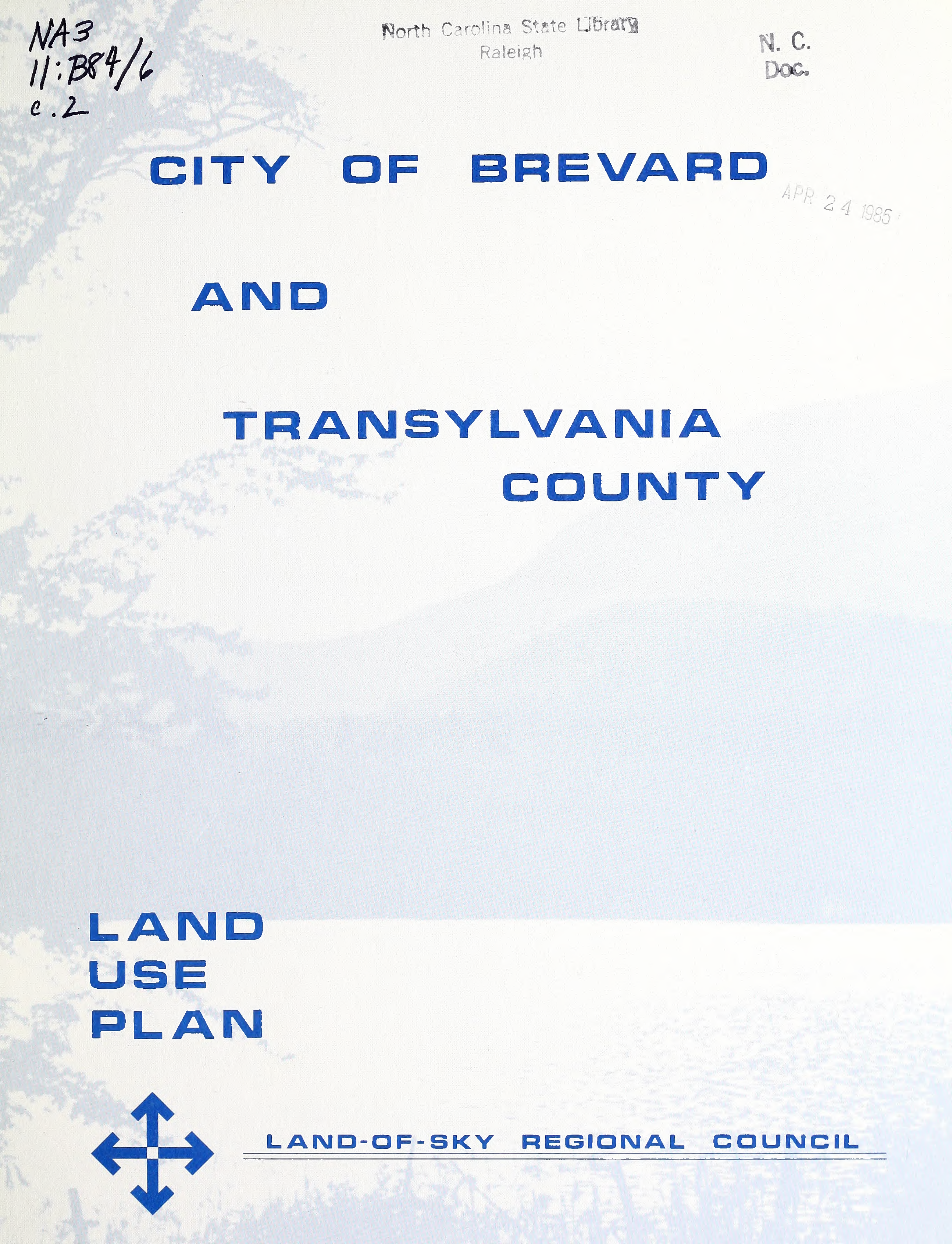

CITY OF BREVARD

AND

TRANSYLVANIA
COUNTY

APR 24 1985

LAND
USE
PLAN

LAND-OF-SKY REGIONAL COUNCIL

BREVARD/TRANSYLVANIA COUNTY

LAND USE PLAN

The preparation of this report was financed in part through a comprehensive planning grant from the Department of Natural and Economic Resources of the State of North Carolina.

City of Brevard and Transylvania County
North Carolina
October, 1976

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CHAPTER I

INTRODUCTION

The Land Use Plan for the City of Brevard and Transylvania County will deal with the physical development of the City and the County, involving the integration of physical, economic and social impacts on the environment. One way of guiding this development process is by establishing goal statements for all development activities and adhering to those goals as closely as possible. This means that community ideas, goals, and objectives should play an important role in the overall decision-making process. It also means that the goal statements should be a true and meaningful expression of public desires.

The planning and development goals for Brevard and Transylvania County should reflect the kind of environment considered most desirable by the citizens. Goals should be ambitious although there may now be financial or practical limitations to their achievement. Ultimate goals need to be identified to serve as a target towards which current efforts may strive. New methods should be developed to approach these goals.

The following goals have been developed for guiding the growth of Brevard and Transylvania County:

1) To help provide all residents with opportunities for a wide range of health, educational, social, economic, commercial, and recreational facilities and activities throughout Transylvania County;

2) To protect the valuable land, water, and air resources of the County for the use and enjoyment of present and future generations;

3) To maintain a balanced ecological system for the County and to develop methods that enable residents to continue physical development of the area with minimum damage to the environment;

4) To develop a strong, diversified economic base and provide for the orderly distribution of employment opportunities throughout the County;

5) To maintain and protect the agricultural activities and environment of Transylvania County;

6) To assure safe and adequate housing for all citizens with the opportunity to choose alternative living environments;

7) To promote a safe, efficient and balanced transportation system to serve the needs of all citizens and to encourage acceptance of local transportation planning goals in the regional and statewide transportation planning process;

8) To encourage the efficient management of both county and municipal governments and the cooperation of governmental authorities in solving problems; and

9) To promote the distinctive character and identity of each community within the County and encourage all communities to work together for the solution of common problems.

CHAPTER II

PHYSICAL CHARACTERISTICS

The physical characteristics of an area are influential in determining the proper location and intensity of development. Features such as topography, geology, and soil conditions may limit development or place the cost of development beyond the range of economic feasibility.

The purpose of this chapter is to present and analyze basic data regarding the natural environment of Transylvania County. This broad inventory of data on various aspects of the physical environment provides the framework within which the land use plan can be developed. The data presented are general in nature and suitable only for guiding general development decisions.

Geographical Setting[1]

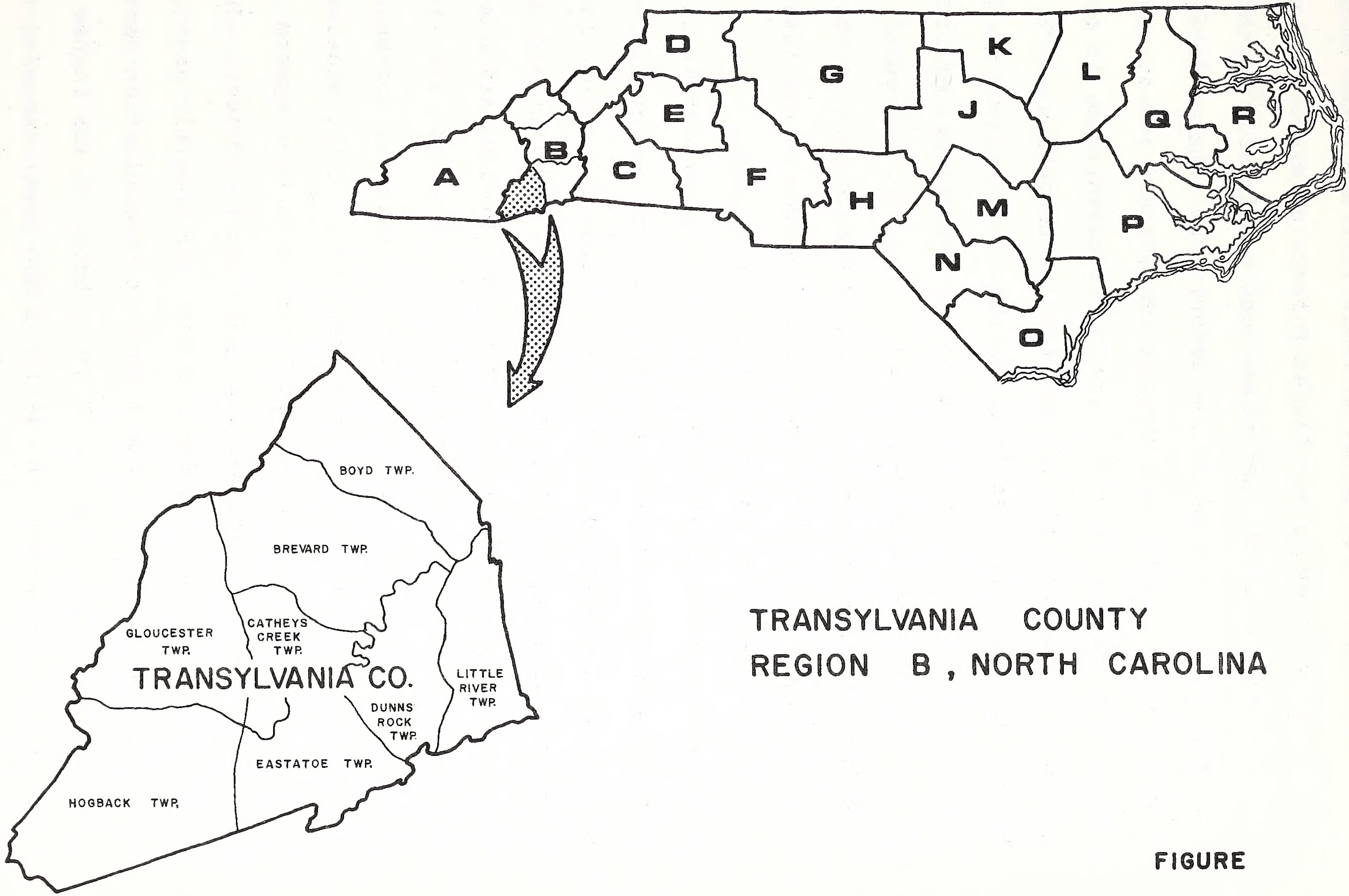
Transylvania County is located in the Appalachian Mountain Range in Western North Carolina, southwest of the Asheville urban area. The County is bordered by Haywood County to the north, Henderson County to the east, Greenville and Pickens Counties, South Carolina, to the south, and Jackson County to the west. Brevard, the County seat, lies near the center of the County, which has an area of 382 square miles, or 244,480 acres (see Figure II-I).

Elevations in the County range from 1,265 feet near the Horsepasture River valley to 6,045 feet near the Blue Ridge Parkway. The western and northern boundaries are formed by a chain of mountains embracing the Tanasee and Pisgah Ridges. The Blue Ridge Mountain chain is located in the southern part of the County.

Climate[2]

The climate of Transylvania County is determined mainly by its latitude, its location on the continent, and its topography. Other influencing factors are average storm paths and windflow patterns. Prevailing southerly winds pass over the warm waters of the Gulf of Mexico and sometimes the Carribean Sea before reaching North Carolina. When these moisture-bearing winds are forced to rise higher and higher in passing over the mountains, they are cooled by lowering atmospheric pressure to the point of condensation and form heavy clouds. Fair weather is most likely to result from winds that blow from the northwest quadrant, as these winds come from drier regions and bear less moisture. They lose a large part of the moisture they do carry in passing over the higher mountains, which extend in a northeast-southwest direction along and beyond the northwestern border of Transylvania County.

On an average, about one day in three is essentially fair, one is cloudy with significant precipitation, and one is partly cloudy, sometimes with light showers. The proportion of rainy days is slightly higher in late spring and early summer and slightly lower in fall and early winter. At any season of the year, wet spells may occur when rain falls every day for one or two weeks or more and occasional periods may occur when no rain falls for a similar length of time.



TRANSYLVANIA COUNTY
REGION B, NORTH CAROLINA

FIGURE

SOURCE : LAND-OF-SKY REGIONAL COUNCIL

Temperature data shown in Table II-1 are based on observations at Brevard and Pisgah Forest, at elevations between 2,100 and 2,200 feet above mean sea level. As this is the more populated area of the County, the tabular data give a good indication of both average temperature and average variability of temperature. For other elevations, an approximation can be made by lowering the temperature 3°F for each 1,000 feet increase in elevation or by raising it 3°F for each 1,000 feet decrease. The lowest temperature of record at Brevard or Pisgah Forest is 20° below zero Fahrenheit. In the higher temperature ranges, there is no record of any 100°F weather, but it probably occurs occasionally in the lowest valleys of the southwestern part of the County.

Transylvania County may be the wettest county in North Carolina, but records are not sufficient to be conclusive. During the ten year period ending in 1960, there were five stations recording precipitation within the County and one just across the County line in Haywood. Precipitation averaged more than sixty inches (60") per year at all six stations, more than seventy inches (70") at four stations, and more than eighty inches (80") at two stations. Four of the stations were at elevations between 2,000 and 3,000 feet, one between 3,000 and 4,000 feet, and one between 5,000 and 6,000 feet. In general, with certain variations that are possibly associated with direction of slope, the amount of precipitation tends to increase with elevation. In 1964, a total of 129 inches of precipitation at Rosman (elevation 2,200 feet) exceeded that at all other stations in North Carolina; nearly thirty-five inches (35") of this rain fell in a single seven day period.

The precipitation data presented in Table II-1 were recorded at stations in the French Broad River valley at elevations between 2,000 and 2,200 feet. Some upward modification of precipitation amounts would probably be necessary to make them applicable to higher elevations. It would be inaccurate to try to generalize with close estimates, because of such important local factors as direction of slope and position of sheltering peaks.

The snow-cover data in Table II-1 is applicable to open, level ground at an elevation of approximately 2,000 feet. In general, the higher the peaks, the more days with snow cover and the greater the average depth. In some winters, the highest peaks may remain snow covered continuously for a month or more. In the usual winter, however, most of the precipitation occurs when southern winds bring rising temperatures along with their heavy burden of moisture; consequently, rain is the predominant form of precipitation in all seasons.

Summer thunderstorms in Transylvania County cause damage more frequently than other storms. They can bring a heavy downpour of rain that, in the rough terrain, may cause flash flooding of small streams and occasionally substantial flooding of the French Broad River. The heaviest electrical force of the storms is expended on the mountain peaks, where the damage is usually limited or unnoticed. In rare instances of dry weather, lightning may start a forest fire. Hail and damaging winds resulting from thunderstorms are usually highly localized and are rarely reported in the limited farming areas of the County. Tropical hurricanes seldom have damaging winds so far inland, but may occasionally cause an increase in precipitation.

Other storms that do affect the weather are winter cold fronts and sleet or glaze. The cold fronts are usually much weakened by passing over the high elevations in the northwest section of the County, but the southwesterly winds in advance of them can account for much precipitation. Sleet consists of frozen raindrops that reach the ground in solid form and accumulate on the surface like snow. Glaze results when liquid rain freezes on outdoor surfaces and forms an increasing layer of ice. Periods of glaze, sometimes called ice storms, occur less frequently in the southern mountains than in the northern, but they do occasionally cause breakage to tree limbs, shrubs and transmission lines.

The prevailing windflow in Transylvania County is southerly. Winds near the earth's surface are channeled by topography, and, in a given locality, their flow may differ considerably from the general flow. Even the general flow may vary at any time from the prevailing direction, and winds from the northeast, north, and northwest are not uncommon. The windspeed is also affected by the rough terrain but, on an average, it is less than ten (10) miles per hour near the surface. On a typical day, it may range from fifteen (15) miles per hour at mid-day to nearly zero (0) in the hours between midnight and dawn. Windiness usually increases with elevation, and on the peaks

TABLE II-1

TEMPERATURE AND PRECIPITATION DATA
Based on Central Location 2,000 Feet Above Mean Sea Level

Month	Temperature				Precipitation				
			Two years in 10 will have at least four days with--			One year in 10 will have--			
	(°F.) Average daily maximum	(°F.) Average daily minimum	(°F.) Maximum temperature equal to or higher than-- [1]	(°F.) Minimum temperature equal to or lower than- [2]	(In.) Aver-age total	(In.) Less than-	(In.) More than-	Number of days with snow cover	(In.) Average depth of snow on days with snow cover
January	51	27	60	7	5.6	2.0	10.7	4	2
February	53	28	63	8	5.6	2.8	9.2	3	2
March	60	34	70	18	6.2	3.4	10.0	2	3
April	69	41	82	27	5.0	2.0	8.9	less than 1	less than 1
May	77	49	86	37	4.8	2.3	8.0	0	------
June	83	57	89	45	5.5	1.7	8.0	0	------
July	84	60	90	51	6.5	3.0	10.7	0	------
August	84	60	89	50	6.0	3.0	10.3	0	------
September	79	54	86	40	4.5	1.1	9.8	0	------
October	71	43	77	25	4.3	1.0	8.6	0	------
November	61	31	73	20	4.0	1.5	8.4	less than 1	less than 1
December	52	26	62	9	5.5	2.4	9.7	2	1
Year--	69	43	293	30	63.5	52.7	75.8	11	2

[1] Average annual highest maximum.
[2] Average annual lowest minimum.

Source: A.V. Handy, Climatologist for North Carolina
U.S. Department of Commerce.

that extend above their surroundings, the average windspeed may be somewhat higher. However, winds funneled between peaks may reach higher speeds than elsewhere. Like other weather factors, winds vary greatly in the mountains.

The sun shines a little less than half the daylight hours, as cloudiness usually comes with the prevailing southerly winds. Relative humidity averages seventy (70%) to seventy-five percent (75%) the year round and ranges on a daily average from about fifty-five percent (55%) at mid-afternoon to ninety-five percent (95%) at sunrise.

Geology[3]

The geologic formations of an area form the base upon which development in the County occurs. Transylvania County has a few known valuable mineral resources to be protected. The rocks in the County are chiefly gneiss and schist. The major types of rocks are described below and mapped on Figure II-2.

Biotite Gneiss - Generally, the biotite gneiss is light to dull gray or yellowish brown. The rock appears to be massive; but, where it is weathered, foliation is discernible. Color banding and compositional layering occur parallel to the foliation. Biotite gneiss is resistant to weathering and forms mountain ridges in the area, including the northern portion of Pisgah Ridge.

Biotite - Injection Gneiss - This unit consists of alternating layers of biotite gneiss and granitic rock. Compositional layers are commonly contorted and are generally less than one inch thick. The granitic layers are coarser grained than the biotite gneiss layers. Biotite-injection gneiss is resistant to weathering and forms mountain ridges.

Hornblende Gneiss - Hornblende Gneiss is black to dark green on fresh surfaces and weathers to dark reddish brown. Generally, the rock is fine- to medium-grained and foliated, but locally may be coarse-grained. Generally, hornblende gneiss is deeply weathered and forms topography of moderate relief. Where hornblende gneiss occurs in mountain ridges, it is associated with biotite gneiss or granite.

Granite Intrusives - Small granite intrusives, which include small stocks and many coarse- and fine-grained granite dikes, occur in the biotite gneiss, hornblende gneiss, and garnet-muscovite schist units. Granite-gneiss intrusives form cores of mountain ridges in areas which are underlain by muscovite-garnet schist and hornblende gneiss. The influence of small granite intrusives on topography is least apparent in biotite gneiss.

Whiteside Granite - This unit crops out in western and southeastern Transylvania County. Whiteside Granite is of white or light-gray color and weathers to a light-gray color, except where weathered inclusions of hornblende gneiss cause a reddish-brown stain. The granite is massive or strongly foliated with prominent compositional layering of biotite gneiss and hornblende gneiss. The Whiteside Granite is resistant to weathering and forms mountain ridges. The massive variety

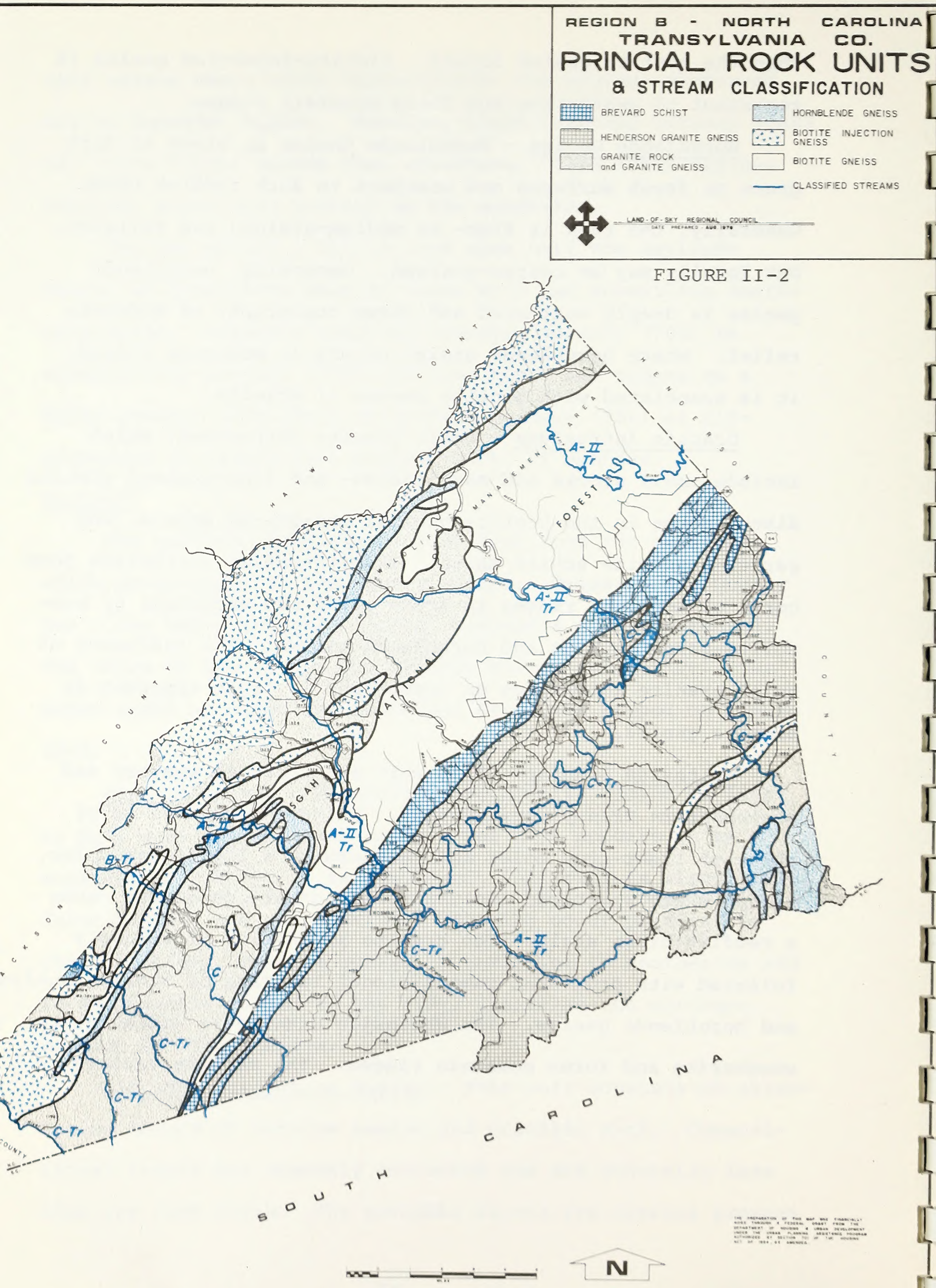

REGION B - NORTH CAROLINA
TRANSYLVANIA CO.
PRINCIAL ROCK UNITS
& STREAM CLASSIFICATION
BREVARD SCHIST
HENDERSON GRANITE GNEISS
GRANITE ROCK and GRANITE GNEISS
HORNBLENDE GNEISS
BIOTITE INJECTION GNEISS
BIOTITE GNEISS
CLASSIFIED STREAMS
LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED - AUG 1976
HAYWOOD COUNTY
HENDERSON COUNTY
JACKSON COUNTY
SOUTH CAROLINA
PISGAH NATIONAL FOREST
WILDLIFE MANAGEMENT AREA
A-II Tr
B-Tr
C-Tr
C
N

FIGURE II-2

forms sheer cliffs and peaks which may correspond to the centers of intrusion.

Henderson Gneiss - Essentially, all the Henderson Gneiss crops out southeast of the Brevard belt in Transylvania County. Small isolated exposures of Henderson Gneiss occur within and northeast of the Brevard belt. The Henderson Gneiss is of medium-gray to dark-gray color and weathers to a light-gray or yellowish- to reddish-brown color. The light colors are most common in the weathered rock. Generally, the gneiss is distinctly foliated with feldspar set in a finer grained matrix of biotite gneiss or quartzite. The broad floodplain of the French Broad River in Transylvania County and mountain ridges southeast of the French Broad River have developed upon the Henderson Gneiss.

Brevard Schist - The Brevard Schist is generally dark bluish-gray, except for lenses and layers of light-gray quartzite and marble, and weathers to dull gray or brown. The Brevard Schist is bounded on the southeast by the Henderson Gneiss and on the northwest by biotite gneiss and coarser grained garnet-muscovite schist. From the South Carolina line northeastward, the northwest edge of the Brevard Schist is in sharp nearly linear contact with sheared biotite gneiss. Contorted beds of graphite schist and grooved and straited surfaces along this contact suggest fault movement. Most of the Brevard Schist rocks weather readily and the resulting topography varies from nearly flat to moderately rugged. Ridges within the Brevard Schist are underlain by quartzite.

Generally, the geologic formations of the County do not impose severe constraints for future development. However, outcroppings of rock and areas where bedrock lies close to the surface are not suitable for development.

Soils[4]

Soil conditions have a most significant impact on land development. Insufficient knowledge of soil limitations often creates severe land-use problems, which result in costs that must be absorbed by the community as well as the property owner. Therefore, it is essential that consideration of general soil characteristics enter into the planning and development process.

The six soil associations in Transylvania County impose different types of limitations on various uses. These associations are briefly discussed below and shown on Figure II-3.

1. Rosman-Toxaway-Transylvania Association - Well-drained to very poorly drained, nearly level soils that are underlain by loam and fine sandy loam or that have a sub-soil dominantly of silty clay loam; on floodplains.

   This association occupies about eight percent (8%) of the land in the County, mainly along the French Broad River and its larger tributaries. The association is characterized by nearly level stream floodplains that are subject to very frequent flooding of very brief duration.

   Rosman soils make up about thirty-two percent (32%) of this association and are well-drained to moderately well-drained. They occupy slightly elevated positions on floodplains near the stream.

   Toxaway soils make up about twenty-seven percent (27%) of this association and are very poorly drained. They occupy low places and depressions on floodplains that are away from the stream in most places.

   Transylvania soils make up about eight percent (8%) of this association and are well-drained and moderately well-drained. They are in slightly depressional areas on floodplains and near the stream.

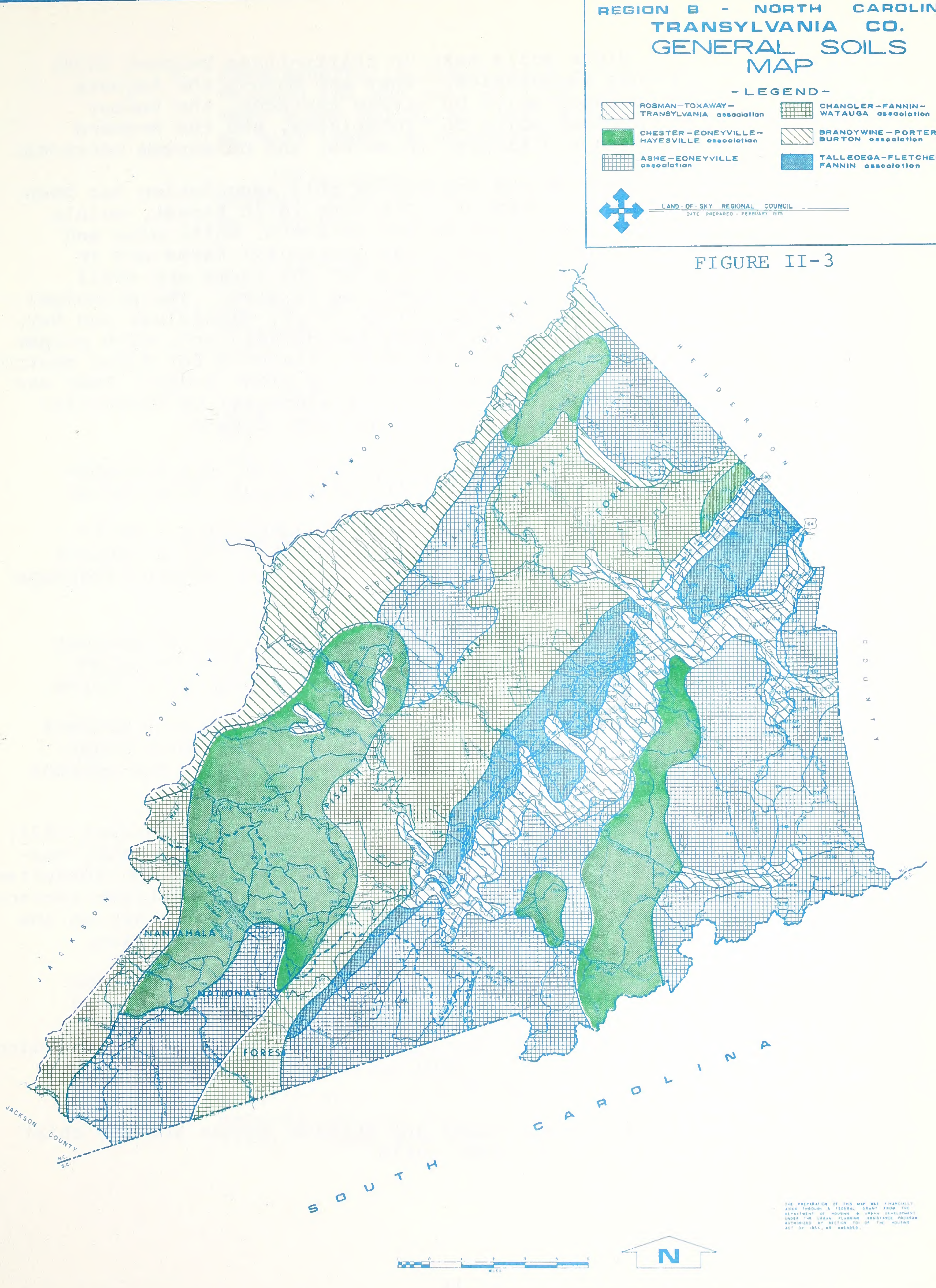

REGION B - NORTH CAROLIN
TRANSYLVANIA CO.
GENERAL SOILS MAP
- LEGEND -
ROSMAN–TOXAWAY–TRANSYLVANIA association
CHANDLER–FANNIN–WATAUGA association
CHESTER–EDNEYVILLE–HAYESVILLE association
BRANDYWINE–PORTER BURTON association
ASHE–EDNEYVILLE association
TALLADEGA–FLETCHE FANNIN association
LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED - FEBRUARY 1975
HAYWOOD COUNTY
HENDERSON COUNTY
JACKSON COUNTY
SOUTH CAROLINA
PISGAH NATIONAL FOREST
NANTAHALA NATIONAL FOREST
N.C.
S.C.
64
THE PREPARATION OF THIS MAP WAS FINANCIALLY AIDED THROUGH A FEDERAL GRANT FROM THE DEPARTMENT OF HOUSING & URBAN DEVELOPMENT UNDER THE URBAN PLANNING ASSISTANCE PROGRAM AUTHORIZED BY SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.
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FIGURE II-3

Minor soils make up thirty-three percent (33%) of this association. They are mainly the Augusta and Delanco soils on stream terraces, the Ponzer and Suncook soils on floodplains, and the Brevard soils on toe slopes, in coves, and on stream terraces.

Most of the acreage in this association has been cleared for farming. The rest is in forest, mainly yellow poplar, red maple, sycamore, white pine and river birch. A few large commercial farms are in this association, but most of the farms are small and are operated by part-time farmers. The principal crops grown are corn, truck crops, gladiolus, and hay. These soils can be farmed intensively and, with proper artificial drainage and other measures for flood control, are well suited to most locally grown crops. They are generally not suitable for residential or industrial development, because of the flood hazard.

Seasonally high water table and very frequent flooding are the chief limitations of these soils.

2. Chester-Edneyville-Hayesville Association - Well-drained, rolling to steep soils that have a subsoil of fine sandy loam to clay; on broad, smooth ridgetops and side slopes.

This association occupies about twenty percent (20%) of the County and is characterized by broad ridgetops and smooth, moderate-to-steep side slopes.

Chester soils make up about fifty (50%) percent of this association; Hayesville soils, about eight percent (8%); and Edneyville soils, about ten percent (10%). These are all well-drained soils.

Minor soils make up about thirty-two percent (32%) of this association. They include Brevard, Tate, Tusquitee and Ashe soils. The Brevard, Tate, and Tusquitee soils are in coves, on toe slopes, and on stream terraces throughout the association. The Ashe soils are on the rougher and steeper areas within the association.

Most of this association is wooded. The more common trees are oaks, hickory, yellow poplar, and white, short-leaf, and pitch pines. The understory is dogwood, huckleberry, mountain laurel and rhododendron. The more gently sloping soils are well-suited to most locally grown crops.

The steep slopes and surface stones are the chief limitations of these soils.

3. Ashe-Edneyville Association - Somewhat excessively drained and and well-drained, moderately steep to very steep soils that have a subsoil of sandy loam to clay loam; on mountains.

   This association occupies about thirty-seven percent (37%) of the County and is characterized by narrow ridgetops and rough, steep side slopes.

   Ashe soils make up about thirty-five percent (35%) of this association. These are somewhat excessively drained soils. Edneyville soils make up about twelve percent (12%) of this association. These are well-drained soils.

   Minor soils make up about fifty-three percent (53%) of this association and include the Brevard, Tate, Tusquitee, Chester and Chandler soils. The Brevard, Tate and Tusquitee soils are in coves and on toe slopes throughout the association. The Chester soils are on the smoother ridges and side slopes, and the Chandler soils are in areas underlain by mica gneiss.

   Practically all of the acreage in this association is in forest, commonly scarlet and chestnut oaks, pitch pine, blackgum and sourwood trees with an understory of dogwood, huckleberry, mountain laurel and rhododendron. The more moderately sloping soils are fairly well-suited to well-suited for most locally grown crops.

   The steep slopes, stoniness and droughtiness are the chief limitations of these soils.

4. Chandler-Fannin-Watauga Association - Somewhat excessively drained and well-drained, rolling to very steep, micaceous soils that have a subsoil of fine sandy loam to clay loam; on narrow ridgetops and side slopes.

   This association occupies about twenty-one percent (21%) of the County and is characterized by narrow ridgetops and steep side slopes.

   Chandler soils make up about thirty percent (30%) of this association. These are somewhat excessively drained, micaceous soils. Fannin soils make up about twenty-five percent (25%) of this association and Watauga soils, about twelve percent (12%). These are well-drained, micaceous soils.

Minor soils make up about thirty-three percent (33%) of this association. They include the Brevard, Tate, Tusquitee, Edneyville, and Ashe soils. The Brevard, Tate and Tusquitee soils are in coves and on toe slopes throughout the area. The Edneyville and Ashe soils are in areas underlain by granite and gneiss.

Practically all of the acreage in this association is wooded. The more common trees are oak, hickory, and shortleaf and pitch pines. The understory is dogwood, huckleberry, mountain laurel and rhododendron. The more moderately sloping soils are fairly well suited to well-suited for most locally grown crops.

The steep slopes, stoniness and droughtiness are the chief limitations of these soils.

5. Brandywine-Porters-Burton Association - Well drained and moderately well-drained, moderately steep to very steep soils that have a subsoil of sandy loam to clay loam; on the higher mountains.

This association occupies about eight percent (8%) of the County and is characterized by narrow ridgetops and steep side slopes, mostly at elevations above 3,000 feet.

Brandywine soils make up about fifty-five percent (55%) of this association and Porters soils, about twenty-five percent (25%). These are well-drained soils. Burton soils make up about five percent (5%) of this association and are well-drained or moderately well-drained soils.

Minor soils make up about fifteen percent (15%) of this association. These include Tusquitee and Haywood soils. Stony land also makes up part of this association. The Tusquitee and Haywood soils are in coves throughout the area, and stony land is on the roughest mountain sides.

Practically all of the acreage in this association is in forest. The more common trees are oak, and beech and, at the highest elevations, red spruce and fraser fir. Only a limited acreage of this association is suited to cultivation.

The steep slopes, stoniness and depth to bedrock are the chief limitations of these soils.

6. Talladega-Fletcher-Fannin Association - Well-drained, rolling to very steep soils that have a subsoil of channery silt loam to silty clay loam; on ridgetops and side slopes.

This association occupies about six percent (6%) of the County and is characterized by narrow, sloping ridgetops and very steep side slopes.

Talladega soils make up about forty-five percent (45%) of this association and Fletcher soils, about ten percent (10%). These are well-drained soils. Fannin soils make up about ten percent (10%) of this association and are well-drained, micaceous soils.

Minor soils make up about thirty-five percent (35%) of this association. These include Brevard, Tate and Tusquitee soils. These soils are in coves, on foot slopes, and on stream terraces throughout this association.

Practically all of this association is wooded. The more common trees are oaks, hickory and shortleaf, pitch, and white pines. There is a heavy understory of mountain laurel on ridges and south and west aspects and of rhododendron on the north and east aspects. The more moderately sloping soils are fairly well-suited to well-suited for most locally grown crops.

The steep slopes and, in places, droughtiness and depth to bedrock are the chief limitations of these soils.

Table II-2 rates the suitability of the soil associations for certain selected uses. The ratings used are slight limitations, moderate limitations, and severe limitations.

Slight - The soils have few or no properties unfavorable for a particular use, or any problems are so minor they can be easily overcome.

Moderate - The soils have one or more properties unfavorable for a particular use, or any problems can be overcome with correct planning, careful design, and good management.

Severe - The soils have one or more properties very unfavorable for a particular use, or any problems are difficult and costly to overcome. Major reclamation work is generally required.

The various uses for which the soil associations were rated are explained below:

1. Structures - Suitability for building foundations, assuming central sewerage is available.

Residential and Commercial - Structures for housing and commercial uses, usually not considered to impose extraordinary stresses on the soil.

Industrial - Structure for industrial uses which may impose more severe stresses due to weight or size of structures.

Soil Features considered: flood hazard, seasonally high water table, depth to bedrock, shrink-swell potential and slope. The limitation for soils that have slopes of ten (10%) to twenty-five percent (25%) was considered moderate and, for those that have slopes of more than twenty-five (25%), was considered severe.

2. Septic Tanks - Suitability for individual sewage disposal systems.

   Soil Features considered: slope, depth to bedrock, flooding, seasonally high water table, and permeability of subsoil and substratum. Also considered important are local experience with, and the records for, existing filter fields.

3. Transportation - Suitability for transportation facilities, such as highways.

   Soil Features considered: depth to bedrock, stoniness, topography, flooding, depth to seasonally high water table, susceptibility to frost heave, stability of cut slopes, and plasticity of the soil material.

   The entire soil profile is evaluated on the basis of undisturbed soil material, except where the surface material has to be removed and wasted because the organic-matter content is high.

4. Recreation - Suitability for development as recreational facility.

   Low-intensity Recreation - Facilities which are spread out and do not focus large numbers of people in one area, such as golf courses, hiking trail, etc.

   High-intensity Recreation - Facilities which tend to focus persons into a rather small area and often involve much removal of vegetation and construction such as ball fields, tennis courts, playgrounds, etc.

   Soil Features considered: slope, stoniness, seasonally high water table, and flooding.

5. Agriculture - Suitability for use for cropland, orchards, etc.

Soil Features considered: water table, slope.

Table II-2 shows that many of the soils associations are rated severe for several types of development. Specific proposals for site development should be evaluated using more detailed soil information.

Natural Resource Management

The efficient management of available natural resources prevents unnecessary depletion of resources and loss of management opportunities. Figure II-4,(inserted in envelope) shows areas of potentially significant mineral deposits as well as areas with potential for agriculture, pasture, and game management. The lands of high agricultural potential generally occur in the low, flat lands along the French Broad River; however, much of this land has already been developed for urban uses. Another agriculturally significant area occurs at the Pink Beds, a plateau formation in northeastern Transylvania County; which now lies within the Pisgah National Forest and, therefore, will not be developed for agricultural uses. The protection of agricultural land has become a growing concern in recent years due to awareness of the food shortages developing worldwide and rapid conversion of agricultural lands to urban uses. Land with significant potential for agricultural use should be protected from encroaching development.

The second major natural resource shown on Figure II-4 is potentially significant mineral sites. Currently, the only mineral extraction occurring in the County is stone-quarrying at Penrose. Most of the designated sites show potential for

TABLE II-2

SOIL LIMITATIONS FOR SELECTED USES

Use / Soil Association	STRUCTURES		Septic Tanks	Trans-portation	RECREATION		Agri-culture
	Residential-Commercial	Industrial			Low Intensity	High Intensity	
Rosman Toxaway Transylvania	Severe-very frequent flooding	Severe-very frequent flooding	Severe-flooding high water table	Severe-flood hazard,high water table	Severe-flood hazard	Severe-Flood hazard	Severe flood hazard,high water table
Chester Edneyville Hayesville	Moderate to severe-slope	Moderate to severe-slope	Moderate to severe-slope	Moderate-slope,frost heave	Moderate-slope	Severe-slope	Moderate to severe-slope
Ashe Edneyville	Severe - slope	Severe - slope	Severe - slope, depth to bedrock	Severe-depth to bedrock, slope	Moderate-slope	Severe-slope	Severe-slope stoniness
Chandler Fannin Watauga	Severe-slope	Severe-slope	Severe-slope	Severe-landslide, erodibility, frost heave	Moderate-slope	Severe-slope	Moderate to severe-slope
Brandywine Porters Burton	Severe - slope	Severe - slope	Severe - slope depth to bedrock	Severe-depth to bedrock, stoniness	Moderate - slope	Severe - slope	Severe - slope, stoniness
Talledega Fletcher Fannin	Severe - slope	Severe - slope	Severe - slope, depth to bedrock	Moderate - slope, frost heave	Moderate-slope	Severe - slope	Severe - slope

Source: U.S. Soil Conservation Service

deposits of asbestos, talc, corundum, usomiculite and olivine. Several sites have potential for mica deposits, with a few scattered sites showing potential for copper, marble and feldspar. These sites are generally located away from the urbanized areas, and management opportunities may occur in the future.

Slope

Slope, expressed as a percentage, is a measure of the change in elevation over a specified horizontal distance, generally one hundred feet (100'). This is an important topographic feature, helpful in evaluating the suitability of the land for different uses. From the viewpoint of engineering feasibility, construction economics, conservation principles and safety, slopes impose limitations for an identifiable range of uses. Figure II-5 illustrates the tolerance range of land uses for varying slopes. It may be noted from Figure II-5 that recreation areas and tracked vehicles, such as bulldozers, can tolerate slopes of forty (40%) to fifty percent (50%), while most other uses cannot tolerate slopes greater than fifteen (15%) to twenty percent (20%).

The availability of suitable land for specified land uses at an acceptable price has been, and will continue to be, a major factor in whether or not the tolerance ranges will be respected. Figure II-6 shows the general slope characteristics of the land in Transylvania County. Slopes have been divided into three categories for this study; zero (0) to fifteen percent (15%), fifteen (15%) to twenty-five percent (25%), and over twenty-five percent (25%). It should be noted from Figure

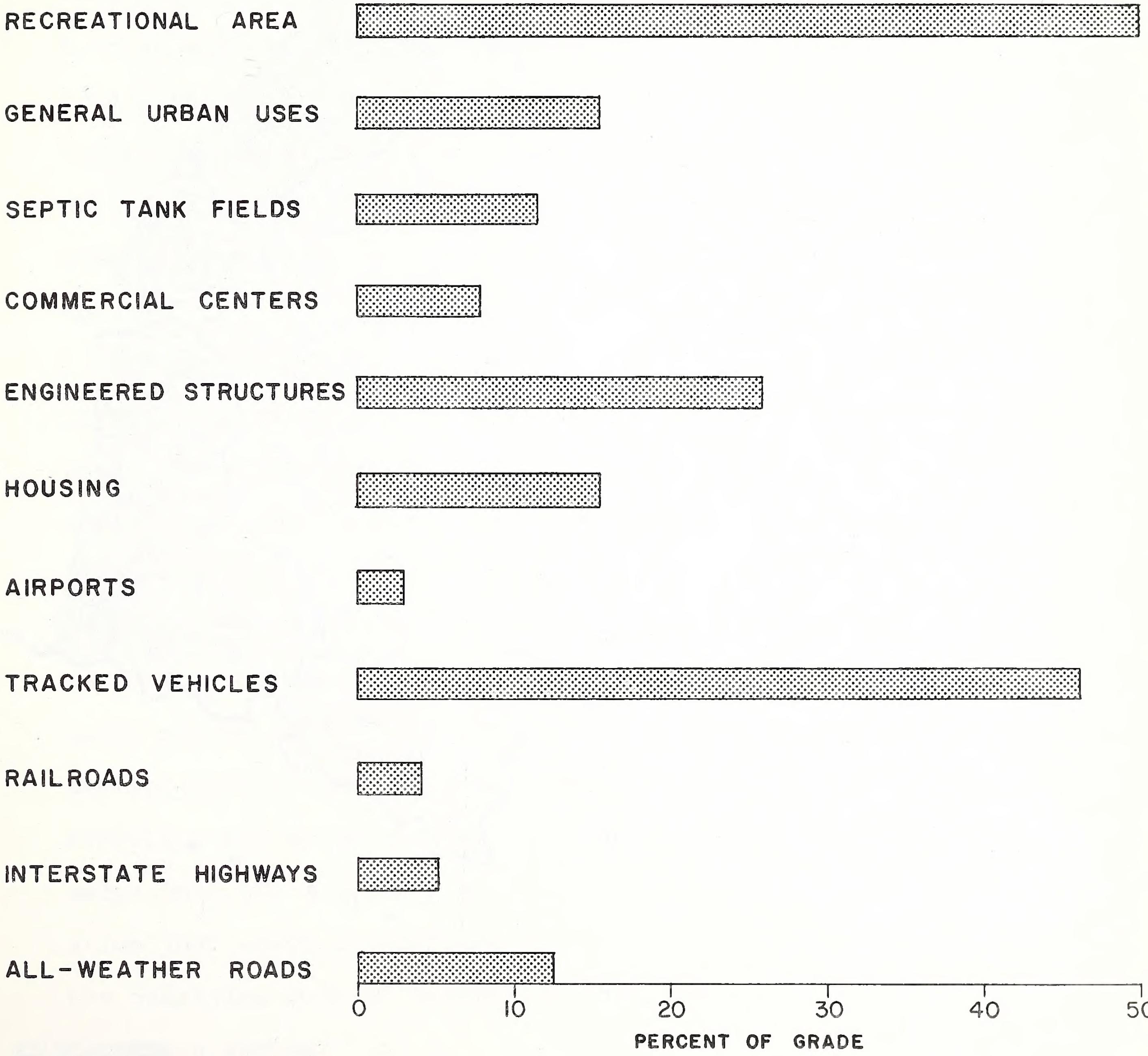
II-6 that much of the County has slopes of over twenty-five percent (25%), severely limiting development, as these steep slopes are not suitable for construction of roads and structures. Also, care must be taken when evaluating land in the zero (0) to fifteen percent (15%) slope category, as much of this land lies within the floodway and flood-fringe areas and, therefore, is unsuitable for development.

Ground-Water Resources[5]

Hydrologic Cycle - The natural and continuous circulation of water between the atmosphere and the earth is called the hydrologic cycle. Water in the form of rain or snow (precipitation) falls upon the surface of the earth. Part drains off directly into streams and eventually to the ocean (runoff) and part is evaporated or transpired by plants (evapotranspiration). A significant part of the precipitation infiltrates the soil cover into underlying rock and reaches the zone of saturation, where the water is called ground water. After it reaches the zone of saturation, ground water flows toward places where it discharges into streams or lakes or directly into the ocean; or where it comes near enough to the surface to be lost by evaporation. The cycle is then completed by the return of water to the atmosphere in the form of vapor.

Occurrence of Ground Water - Ground water occurs in rock openings that may be either primary or secondary. Primary openings are formed at the same time the rock was formed, such as the spaces between pebbles in a gravel bed. Secondary openings are those formed after the rock was formed, such as fractures and solution openings. The openings which yield water in crystalline rocks are secondary, and include joints,

SLOPE TOLERANCES FOR SELECTED LAND USE ACTIVITIES



SOURCE : CLAIRBOURNE COUNTY, TENNESSEE , COMPREHENSIVE PLAN

FIGURE

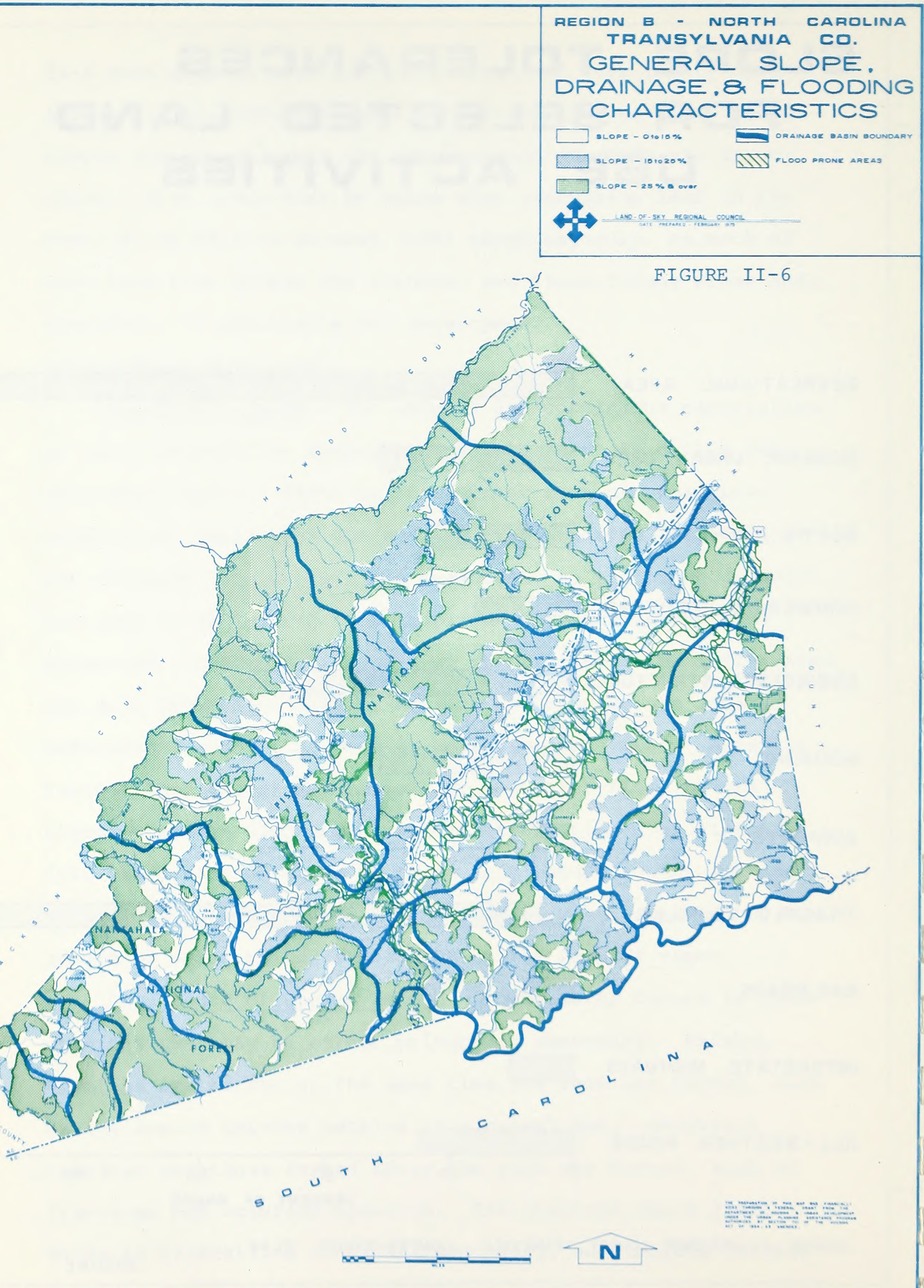

REGION B - NORTH CAROLINA
TRANSYLVANIA CO.
GENERAL SLOPE, DRAINAGE, & FLOODING CHARACTERISTICS
SLOPE - 0 to 15%
SLOPE - 15 to 25%
SLOPE - 25% & over
DRAINAGE BASIN BOUNDARY
FLOOD PRONE AREAS
LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED - FEBRUARY 1975
HAYWOOD COUNTY
HENDERSON COUNTY
JACKSON COUNTY
SOUTH CAROLINA
PISGAH NATIONAL FOREST
MANAGEMENT AREA
NANTAHALA NATIONAL FOREST
N

FIGURE II-6

fractures, cleavage planes, planes of schistosity, bedding planes and solution channels, which are not uniformly distributed through the rock. Most of the ground water in Transylvania County occurs in these secondary openings, with the exceptions of water in local sand and gravel deposits.

An underground zone or layer which is a source of water is called an aquifer. Where the water is not confined beneath an impermeable layer of rock, the water table is free to rise and fall with changes in atmospheric pressure and precipitation. The water table intersects ground level at springs, streams, lakes and ponds. Where ground water occurs only in irregularly-distributed fractures and other secondary openings, the water table can be very irregular or discontinuous.

Methods of Obtaining Ground Water - In Transylvania County, springs, where available, supply residential and agricultural water users. Springs are usually located at the head of a draw or the foot of a bluff or may occur where the water table intersects the ground surface, as at changes in slope. Because of soil cover or sealed enclosures, it is usually difficult to ascertain the origin of springs. In a few larger springs, the water can be seen issuing from fractures in the rocks. Most smaller springs appear to issue from the contact of soil or saprolite and unweathered rock. In this type of spring, water seeps into the soil on a hill and forms a thin zone of saturation just above impermeable bedrock. Where bedrock crops out, the overlying zone of saturation intersects the ground surface, forming a spring.

Wells are the most common type of individual water supply for residential areas. Topography is an important factor to be considered in selecting a well site. Wells drilled in valleys and draws are, on the average, shallower and have higher yields than those drilled on slopes, hills and ridges. The water table in valleys and draws may be closer to the surface than on slopes and hills. Valleys and draws may follow pre-existing zones of fractures in which water is stored and transmitted. However, high clay and silt content in flood plain deposits can be unfavorable for the development of ground water supplies. Generally, wells can provide sufficient water for low-density residential use throughout the County, but may not be appropriate for obtaining large volumes of water.

Drainage

Rivers, streams, and drainageways provide water for domestic, industrial and recreational use; nurture kinds of wildlife; and are a conduit for flood waters. Because of these functions, waterways and drainage basins are important natural features.

Figure II-6 identifies the major watersheds in Transylvania County. Watersheds are important from several respects, but two major considerations are site drainage and sewers. Before a developer changes the natural character of an area, he should understand fully how his project will affect or be affected by the drainage in the total watershed. Improper culverts, siltation problems, flooding, and poor sanitation are but a few of the problems encountered by those who ignore watershed drainage considerations. Since sewers generally work on a gravity-flow principle, the size and orientation of drainage basins are important. Considerations of sewage treatment facility locations and staging of urban development are often based on the physical characteristics of watersheds.

Stream Quality

The North Carolina Stream Sanitation Committee has classified the streams in Transylvania County according to the water quality standards that must be achieved or maintained. The classifications are shown for the major streams in the County on Figure II-2 and are defined as follows:

Class A-I - Suitable as a source of water supply for drinking, culinary, or food processing purposes after treatment by approved disinfection only, and other usage requiring waters of lower quality.

Class A-II - Suitable as a source of water supply for drinking, culinary or food processing purposes after approved treatment equal to coagulation, sedimentation, filtration, and disinfection, etc., and any other usage requiring waters of lower quality.

Class B - Suitable for outdoor bathing and any other usage requiring waters of lower quality.

Class C - Suitable for fishing and fish propagation, and any other usage requiring waters of lower quality.

Class D - Suitable for agriculture and for industrial cooling and process water after treatment by the user as may be required under each particular circumstance.

Trout (T) - Suitable for trout habitat, having a temperature of no more than 68° F.

Flooding[6]

Flooding has always posed a major hazard in Transylvania County. The floodplain of the French Broad River at its headwaters is wide, and flooding at the Town of Rosman has occurred frequently. The floodplain narrows somewhat near Brevard, but flooding of the French Broad River and several tributary streams has been recorded. For the purposes of studying flooded areas, the Tennessee Valley Authority has defined a one-hundred (100) year floodplain as the area which would be inundated by a flood which would probably occur on the average of once in a hundred years. This floodplain (shown on Figure II-6) is divided into the floodway and the flood fringe areas under the National Flood Insurance Program. The floodway is the area which would contain a one-hundred (100) year flood without increasing the height of the flood more than one (1) foot. The flood fringe is the area outside the floodway which would also be inundated by a one-hundred (100) year flood. Development is generally restricted from the floodway and flood fringe areas to lessen damage downstream and protect lives and property in case of flood.

Vegetation and Wildlife[7]

Vegetation - Originally, forests covered all the land area in the County except for large rock outcrops, such as those in the vicinity of Devil's Courthouse, Cedar Mountain, and Looking Glass Rock. The trees were predominantly a wide variety of broad-leaved, deciduous hardwoods. Some cone-bearing species, such as pine and hemlock, grew among the hardwoods. The understory consisted of shadestands of mountain laurel and rhododendron. Variable mixtures of red and white oaks, hickory, yellow poplar, American chestnut, black cherry, black locust, beech, blackgum, white ash, basswood, black and yellow birches, black walnut, red and sugar maples, eastern hemlock, and eastern white, shortleaf, Virginia, pitch and Table Mountain pines grew at different elevations and on different slopes and exposures in the mountains.

The extensive lumbering experienced by all the Southern Appalachian Region in the nineteenth century and the early part of the present century virtually eliminated this virgin forest. In a few of the more inaccessible regions, primarily near the highest elevations, a small remnant of this virgin forest still exists. Thus, the present stands are primarily second growth.

The American Chestnut was formerly the most important tree in the County for timber and nut production, as well as for providing enormous quantities of food for wildlife. Unfortunately, the Chestnut blight fungus had killed virtually all by 1940. Some of the dead trees were cut and utilized for lumber, but the remainder have fallen and decayed. A few stumps still send forth shoots, but these are usually killed by the blight before reaching significant size.

The present second growth stands are still mainly hardwoods, no one species being dominant as the Chestnut once was. Some coniferous stands of white, shortleaf and Virginia pines have become established on idle or abandoned cropland. The dense understory consists largely of rhododendron and mountain laurel.

Two smaller plants are worthy of mention as rare plants. The single-sorus spleenwort is found at Corbin Creek and Bearwallow Creek. Another rare plant is the Shortia Galacifolia, which occurs in only a few scattered locations in Western North Carolina. Originally described by a British botanist from a collection at a British museum, the locations of these plants remained unknown for many years until their discovery in North Carolina. One of these locations is in southwestern Transylvania County. Many other types of wildflowers and numerous varieties of ferns and mosses provide food for birds and other animals, as well as giving aesthetic pleasure.

Wildlife - Transylvania County provides a variety of food and habitats for wildlife. The cool waters of the mountain streams are inhabited by brown, rainbow, and brook trout; while the lower, warmer sections of the streams harbor rock bass, red-breasted sunfish, and bluegills with smallmouth bass in the transition area between the two.

The streams and woodlands provide shelter for a wide variety of amphibians and reptiles. In fact, the Southern Appalachians are the richest area in the world in both numbers of species and individuals of salamanders, especially the Plethedontidae (lungless salamanders), which include the dusky salamanders found in drier locations, as well as red, mud, two-lined, and long-tailed salamanders. Other salamanders of interest found in the County are the green salamander, an uncommon cliff dweller, and the hellbender (heaviest of all North American salamanders), found in the French Broad River and its tributary streams.

Frogs and toads are less common than salamanders in the County. Bull frogs, green and leopard frogs and spring peepers are the most important frogs, while only two (2) toads, the

American toad and Fowler's toad, are found in the County.

Few species of lizards and turtles inhabit the County; however, two (2) species are noteworthy. The rare coal skink is found through the area, and the bog turtle has been reported in a few wetland areas. Several species of snakes live in Transylvania County. The majority of snakes, both in number of individuals and number of species, are harmless, such as the garter snake and ring-necked snake. Only two (2) species of poisonous snakes, copperhead and timber rattlesnake, inhabit the area. The County is fortunate in that neither of these are especially dangerous compared to species such as the Eastern Diamondback rattlesnake and cottonmouth, both found as close as the lower piedmont of South Carolina.

The bird population of the County is unusually varied due to the unique location of the Southern Appalachians. Many northern species, such as red crossbill, winter wren and red-breasted nuthatches, are permanent residents. Western North Carolina is the southern limit of the common raven in eastern North America. Occasional sightings of golden eagles have been made near the Blue Ridge Parkway. Ruffled grouse, bobwhite, and mourning doves are the most important game birds in the County. There is some duck hunting along the French Broad River, with wood ducks being the most important species, although several other species migrate along the river in spring and fall. Scattered populations of wild turkeys have also been reported in the County.

The forestlands of the County provide the habitat for many of the mammals. A few, such as rabbits, opossums, and deer, are found in more open locations. Gray, red, and fox squirrels are found in the woods. Fur-bearing mammals include mink, skunk, muskrat and beaver. A scattered population of bear has been reported in the southwestern section of the County. Bobcat and red and gray fox are also found in scattered locations throughout the County.

Fragile Environments

Various types of natural and man-made features have been defined as fragile environments which should be protected from development. These include scenic/natural areas, geologic areas, historical sites, and areas of archealogic significance. In the Southern Highlands Resources Management Plan, Dr. Dan Pittillo of Western Carolina University evaluated natural areas which could be considered "fragile environments." The areas can be divided into two main groupings, scenic/natural areas and geologic areas.

Scenic/natural areas include:

1. Bogs - Relatively old wetlands, characterized by peaty soils, sphagnum moss, various bog species; important wildlife areas; areas should be at least 0.25 hectare.
2. Ecological-type communities - Areas selected for illustration of climax or successional vegetation and associated animal species populations.
3. Endangered, threatened, rare populations.
4. Lakes - No natural lakes exist in the area, but natural value is associated with artificial lakes just as with natural lakes.
5. Marshes - Better drained than swamps and not flooded during part of the year; important wildlife zones.
6. Nodes of high precipitation - Especially those areas averaging 230 centimeters (ninety (90) inches) or more per year; steep mountain slopes where geographic precipitation is heavy.

7. Ponds and Lagoons - A few small, natural ponds and quite a few lagoons occur in the region, representing important natural areas.

8. Record plants - largest, rare forms, etc.

9. Relict - Edge of range, endemic species.

10. Shoals - "White water" areas of at least 0.5 kilometers stretches on small streams.

11. Swamps - Relatively recent, early successional wetlands; important biological areas.

12. Virgin or primeval communities.

13. Waterfalls - Minimum criteria might be streams of 1 meter width and 8 centimeters depth falling about 6 meters distance.

14. Wild and scenic rivers - Specially classified by legislatures.

15. Wildlife management areas.

Geologic areas include:

1. Cliffs and rock outcroppings - Naturally exposed rock surfaces of at least 0.5 hectare size.

2. Coves - Usually steep sloped, upper headwater valleys, relatively small units.

3. Dikes

4. Faults

5. Gorges - Relatively large, steep creek or river banks.

6. Mineral springs

7. Monoliths, monadnocks, etc.

8. Prominent peaks - Highest peaks of a range, etc.

9. Rare minerals - Carborundum, etc.

10. Rare rocks and special mineral soils - Limestone outcroppings, serpentine soils.

11. Ridgetops - Larger areas of high relief, prominent and usually steep sloped.

12. River islands - Important for successional plant communities.

13. River valleys - Large areas of "open space", relatively undeveloped by urbanization.

14. Thermal springs

15. Unusual weathered formations - Locations of fanciful features, rock bridges, etc.

In his survey of Transylvania County, Dr. Pittillo located fifty-nine (59) areas meeting his criteria. They are shown on Figure II-7.

Historic sites in Transylvania County are primarily of local interest. The area was inhabited by Indians at the time of the Revolutionary War and took part in the Civil War only by means of manpower and materials manufactured at the Davidson River Iron Works (near Boyleston Creek). Figure II-7 shows several historic sites in the County. Included are the Galloway House, which is the oldest in the County; Morgan's Mill; the Transylvania County Courthouse, built in 1874; two old houses and the Cradle of Forestry, site of the first forestry school in the United States. The area now included within Transylvania County contains the sites of two known Indian settlements, one at Lake Toxaway and another at the headwaters of the French Broad River near Rosman. Indian occupation of other areas within the County during the Woodland Period (300 B.C. to 1700 A.D.) has been established at several locations.

Summary

Figure II-8 shows the general suitability of the land in Transylvania County for development. Land was categorized combining several factors, which have been discussed separately, including soil suitability, slope and flooding characteristics.

REGION B - NORTH CAROLINA
TRANSYLVANIA CO.

FRAGILE ENVIRONMENTS

LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED - JULY 1976

FIGURE II-7

LEGEND

(17-S) SCENIC/NATURAL AREAS

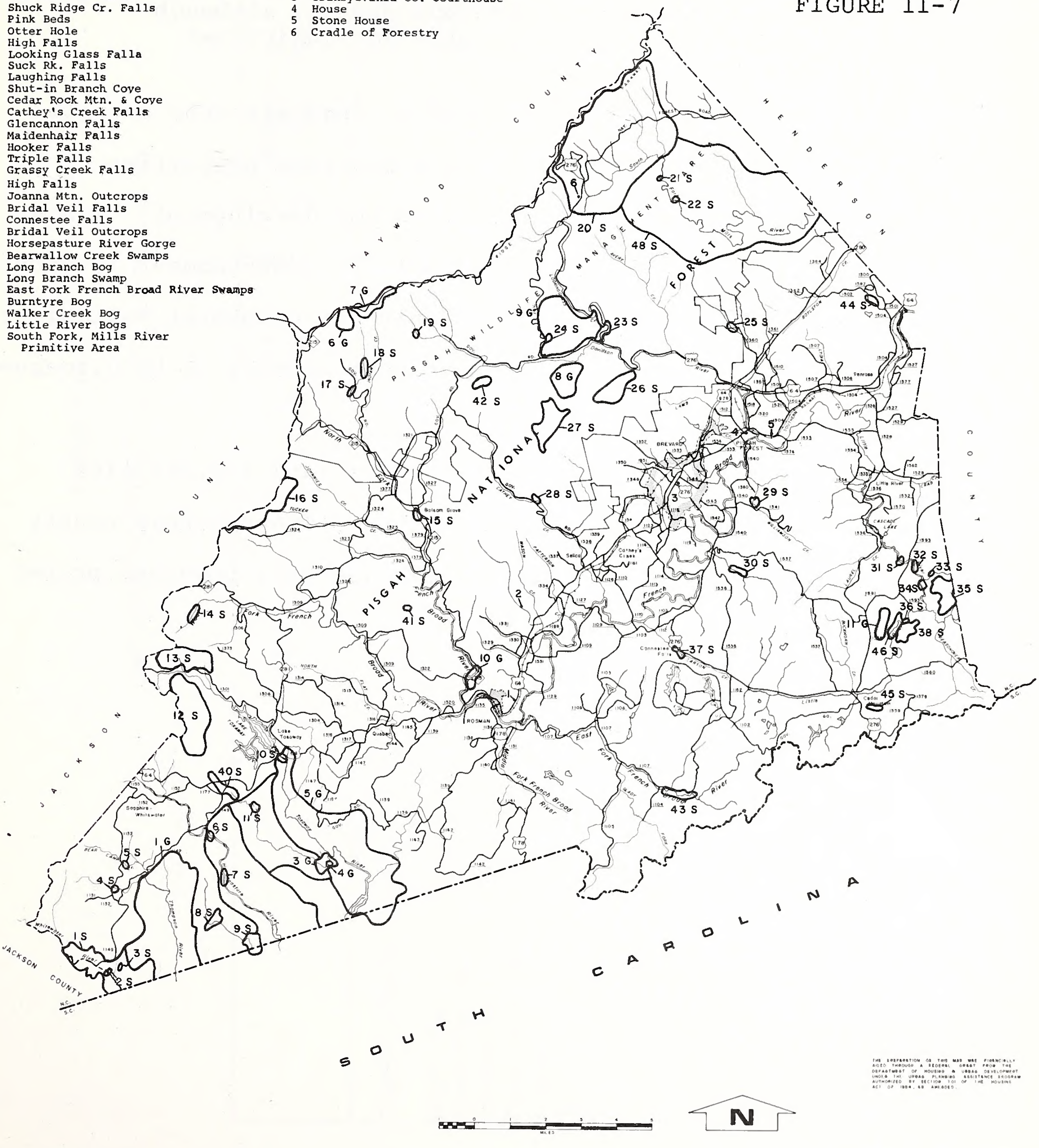
1 Whitewater R. Gorge
2 Whitewater R. Falls (Upper)
3 Corbin Cr. Falls
4 Bohaynee Cascades
5 Thompson R. Falls
6 Rainbow Falls
7 Windy Falls
8 Upper Bearcamp Cr. Falls
9 Lower Bearcamp Cr. Falls
10 Toxaway Falls
11 Upper Bearwallow Cr. Falls
12 Ravenrock Cliffs
13 Cold Mt.-Panthertail Mtn. Cliffs
14 Dismal Falls
15 Bird Rock Falls
16 Bald Rock Cliffs
17 Courthouse Falls
18 Chestnut Ck. Falls
19 Shuck Ridge Cr. Falls
20 Pink Beds
21 Otter Hole
22 High Falls
23 Looking Glass Falla
24 Suck Rk. Falls
25 Laughing Falls
26 Shut-in Branch Cove
27 Cedar Rock Mtn. & Cove
28 Cathey's Creek Falls
29 Glencannon Falls
30 Maidenhair Falls
31 Hooker Falls
32 Triple Falls
33 Grassy Creek Falls
34 High Falls
35 Joanna Mtn. Outcrops
36 Bridal Veil Falls
37 Connestee Falls
38 Bridal Veil Outcrops
39 Horsepasture River Gorge
40 Bearwallow Creek Swamps
41 Long Branch Bog
42 Long Branch Swamp
43 East Fork French Broad River Swamps
44 Burntyre Bog
45 Walker Creek Bog
46 Little River Bogs
47 South Fork, Mills River
Primitive Area

(6-G) GEOLOGIC AREAS

1 Thompson Gorge
2 Bearwallow Creek Gorge
3 Lower Bearwallow Creek Falls
4 Bearwallow Limestone Outcrop
5 Toxaway River Gorge
6 Devil's Courthouse
7 Chestnut Bald/Silvermine
Bald Cliffs
8 John Rock
9 Looking Glass Rock
10 Big Ridge Limestone Outcrops
11 Cedar Rock Outcrop

(3-0] HISTORIC SITES

1 Galloway House
2 Morgan's Mill
3 Transylvania Co. Courthouse
4 House
5 Stone House
6 Cradle of Forestry



THE PREPARATION OF THIS MAP WAS FINANCIALLY AIDED THROUGH A FEDERAL GRANT FROM THE DEPARTMENT OF HOUSING & URBAN DEVELOPMENT UNDER THE URBAN PLANNING ASSISTANCE PROGRAM AUTHORIZED BY SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

Suitability ratings were divided into the following categories:

Slight limitations - Lands in this category are generally favorable for development at urban densities.

Moderate limitations - Lands in this category have moderate limitations, which can be overcome by proper engineering and development practices.

Severe limitations - Lands in this category are generally unfavorable for development, although scattered sites are acceptable for individual residences.

It should be noted that these ratings are very general in nature. Specific parcels of land may have properties which render them more or less suited for development. Table II-3 shows the amount of land suitable for development in each township. These acreages reflect only environmental suitability and do not consider other pertinent factors to be discussed in later chapters.

Although the highest percentage of land (53.5%) lies within the "severe limitations" category, Transylvania County still has much land available for development, provided proper precautions are taken.

TABLE II-3

GENERAL SUITABILITY FOR DEVELOPMENT

	Total		Slight Limitations		Moderate Limitations		Severe Limitations	
	Acres	%[1]	Acres	%	Acres	%	Acres	%
TRANSYLVANIA COUNTY	244,480	100%	22,297	9.1[1]	91,456	37.4[1]	130,727	53.5[1]
Boyd Twp.	31,597	12.9	2,623	8.3[2]	4,209	13.3[2]	24,765	78.4[2]
Brevard Twp.	40,678	16.6	3,082	7.5	3,443	8.5	34,153	84.0
Cathey's Creek Twp.	19,420	7.9	1,363	7.0	12,970	66.8	5,087	26.2
Dunn's Rock Twp.	18,891	7.7	1,936	10.3	9,034	47.8	7,921	41.9
Eastatoe Twp.	31,960	13.1	1,929	6.1	16,343	51.1	13,688	42.8
Gloucester Twp.	36,818	15.1	2,043	5.5	20,164	54.8	14,611	39.7
Hogback Twp.	39,249	16.1	4,552	11.6	14,718	37.5	19,979	50.9
Little River Twp.	25,867	10.6	4,769	18.4	10,575	40.9	10,523	40.7

1 Percent of total County land.

2 Percent of land in township.

Source: Figure II-8

REGION B - NORTH CAROLINA
TRANSYLVANIA CO.

SUITABILITY FOR DEVELOPMENT

-LEGEND-

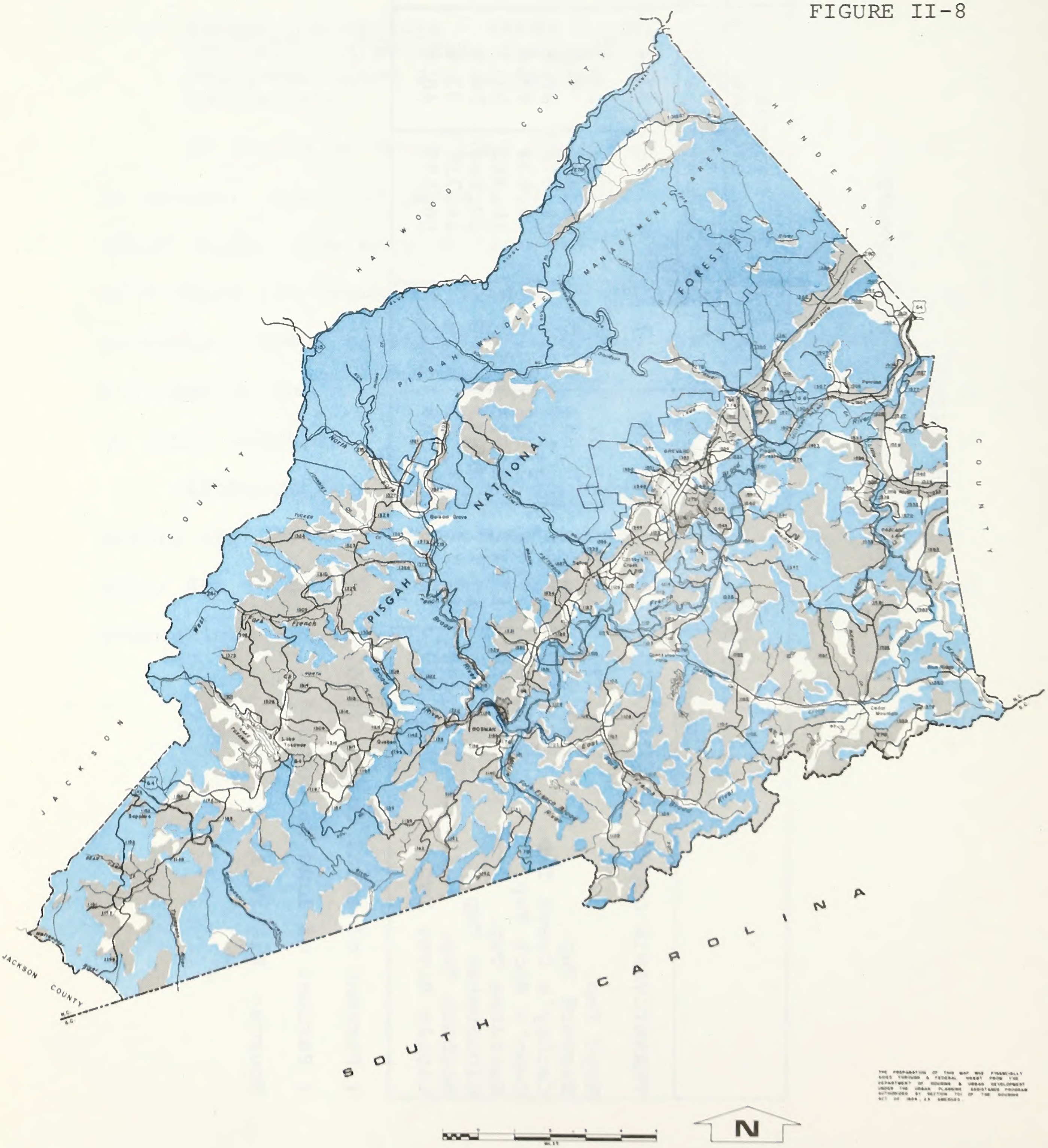
☐ SLIGHT LIMITATIONS

▨ MODERATE LIMITATIONS

🟦 SEVERE LIMITATIONS

LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED - JULY 1976

FIGURE II-8



THE PREPARATION OF THIS MAP WAS FINANCIALLY AIDED THROUGH A FEDERAL GRANT FROM THE DEPARTMENT OF HOUSING & URBAN DEVELOPMENT UNDER THE URBAN PLANNING ASSISTANCE PROGRAM AUTHORIZED BY SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

FOOTNOTES

1. United States Department of Agriculture Soil Conservation Service, Soil Survey of Transylvania County, North Carolina (Washington, D.C., 1974) p. 1.

2. A. V. Hardy, Climatologist for North Carolina, National Weather Service, United States Department of Commerce.

3. Henry Trapp, Jr., United States Geological Survey, Geology and Ground - Water Resources, North Carolina (1970), pp. 12-24.

4. United States Department of Agriculture Soil Conservation Service, pp. 4-24.

5. Henry Trapp, Jr., pp. 115-118.

6. Tennessee Valley Authority, Floods on French Broad River in North Carolina (Knoxville, Tennessee, 1973).

7. USDA, Soil Survey.

8. Southern Highlands Resources Management Plan, Volume 2.

CHAPTER III

POPULATION AND ECONOMIC CHARACTERISTICS

The population and economic characteristics of the County have a major impact on the future land use patterns. The existing situation must be analyzed before projections of future population and employment can be made. The projections then provide the basic data upon which future land use requirements are forecast. The diversity and strength of the local economy are parameters which determine how rapidly growth will occur. This chapter will discuss the present population characteristics and the local economic base and will then project future population and employment at five-year intervals over the twenty-year planning period. This chapter will cover only basic population estimates and projections and employment by general category for each township as this information is vital to the Land Use Plan. More detailed information is available in the Region B Population and Employment Study from which the the information presented in this chapter was taken.

Population Characteristics

Current Population Estimates (1975) - The 1970 Census showed Transylvania County with a population of 19,713 persons, 5,243 of whom resided in the City of Brevard and 407 in the Town of Rosman. Substantial growth occurred in the County between 1970 and 1975. Population estimates were prepared by

TABLE III-1

TRANSYLVANIA COUNTY POPULATION BY TOWNSHIPS AND INCORPORATED AREAS (NUMBER OF PERSONS)

	1960	1970	Increase/ Decrease (1960-1970)	Change (%) (1960-1970)	1975	Increase/ Decrease (1970-1975)	Change (%) (1970-1975)
TRANSYLVANIA COUNTY	16,372	19,713	3,341	20.41	23,000	3,287	16.67
Boyd Township	1,565	2,092	527	33.67	2,360	268	12.81
Brevard Township	8,779	9,998	1,129	13.89	10,630	632	6.32
Cathey's Creek Township	2,055	2,732	677	32.94	3,000	268	9.80
Dunn's Rock Township	689	908	219	31.79	2,010	1,102	121.37
Eastatoe Township	1,072	1,373	301	28.08	1,520	147	10.71
Gloucester Township	477	526	49	10.27	780	254	48.29
Hogback Township	936	961	25	2.67	1,260	299	31.11
Little River Township	799	1,123	324	40.55	1,440	317	28.23
Brevard	4,857	5,243	386	7.95	5,695	452	8.63
Rosman	419	407	-12	-2.86	400	-7	-1.72

SOURCE: Land-of-Sky Regional Council

TABLE III-2

POPULATION PROJECTIONS
BY TOWNSHIPS AND INCORPORATED AREAS (NUMBER OF PERSONS)

	1975	1980	1985	1990	1995	Increase	Change (%)
TRANSYLVANIA COUNTY	23,000	25,700	27,800	29,000	30,400	7,376	32.1
Boyd Township	2,360	2,570	2,750	2,840	2,976	620	26.3
Brevard Township	10,630	11,330	12,010	12,350	12,360	2,028	19.6
Cathey's Creek Township	3,000	3,340	3,590	3,710	3,857	856	28.5
Dunn's Rock Township	2,010	2,670	3,110	3,430	3,796	1,784	88.7
Eastatoe Township	1,520	1,670	1,780	1,820	1,913	393	25.9
Gloucester Township	780	820	860	900	914	164	21.1
Hogback Township	1,260	1,630	1,840	1,940	2,100	840	53.9
Little River Township	1,440	1,670	1,860	2,010	2,130	691	48.2
Brevard	5,695	6,050	6,390	6,540	6,680	1,793	31
Rosman	400	600*	625	650	675	276	69.2

SOURCE: Land-of-Sky Regional Council

* Due to Annexation

Land-of-Sky Regional Council based on the number of housing units counted during early 1975 as part of the Region B Housing Inventory. This data was updated with building permit data and basic assumptions were made regarding vacancy rates and average household size. The estimate shows a County population of 23,000 persons with 5,695 persons in Brevard and 400 persons in Rosman. Table III-1 shows the distribution of population by township and increases from 1960 to 1970 and then 1970 to 1975. The large increase from 1970 to 1975 and the opinion of many local residents suggests that the 1970 Census might have underestimated the number of persons in the County.

The areas of most rapid growth between 1960 and 1970 were Little River, Boyd, and Cathey's Creek Townships. Cathey's Creek Township was developed for residential subdivisions during this time, while Little River and Boyd Townships experienced more generalized residential growth. Between 1970 and 1975, the areas of most rapid growth were Dunn's Rock and Hogback Townships where major subdivision development occurred. These subdivisions include both permanent residences and second homes, although only year-round residents are counted in the population estimates. The slowest rates of growth were shown in Brevard and Cathey's Creek Townships which have larger population bases. Only the Town of Rosman showed a decrease in population for the five-year period. This decrease was very slight, seven (7) persons or two percent (2%) of the population.

Population Projections - Many factors are analyzed in projecting future populations. The projections used in this study were drawn from the Region B Population and Employment Study.

Detailed information regarding the projections and the methodology used to obtain them can be found in that study.

The population projections were based on the 1972 and 1974 employment projections done by the Office of Business and Economic Research Services (OBERS) of the Department of Commerce. These employment projects were allocated to each Region B county based on resident labor force. The population projections were then done using the labor force participation rate, which is the ratio of the labor force to the total population. These county population projections were then allocated to the township level by assessing factors which influence the share of a County's growth which will occur in an individual township. These factors include commuting time/distance to employment centers, recent or proposed highway improvements, ratio of urban to rural residents, availability of public/community water and sewer services, and the amount of developable land available. The projections shown in Table III-2 estimate the number of persons expected to reside in Transylvania County during the planning period.

Brevard Township will continue to be the center for growth and urban development throughout the planning period. It should be noted that these projections are based on continuation of past growth trends and do not take into account any large-scale industrial expansion or new industrial concern locating in Transylvania County. Such an occurrence would necessitate immediate revision of the population projections.

Economic Characteristics

Economic Base - Transylvania County has a fairly diversified economic base. Major industrial concerns located in the

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TABLE III-3

INCOME FOR FAMILIES BY TOWNSHIP, 1970

	Transylvania County	Boyd Tp.	Brevard Tp.	Cathey's Creek Tp.	Dunns Rock Tp.	Eastatoe Tp.	Gloucester Tp.	Hogback Tp.	Little River Tp.
(Number of Families)									
Under $3,000	589	47	213	83	21	75	52	44	54
% of Total	11	8	9	11	9	21	41	17	17
$3,000-4,999	640	82	284	116	39	41	12	60	6
% of Total	13	14	11	15	16	11	9	23	2
$5,000-6,999	841	113	381	160	36	44	6	27	74
% of Total	16	20	15	21	15	12	5	11	25
$7,000-9,999	1,374	196	641	192	79	104	25	51	86
% of Total	27	34	25	26	32	29	20	20	29
$10,000-14,999	1,249	126	698	159	56	62	26	71	51
% of Total	24	22	28	21	23	17	20	28	17
$15,000 or more	454	10	312	44	13	36	6	3	30
% of Total	9	2	12	6	5	10	5	1	10
Total	5,147	574	2,529	754	244	362	127	256	301

SOURCE: 1970 Census "Fifth Count" Tabulations, Bureau of the Census, U.S. Department of Commerce, Washington, D.C.

TABLE III-4

INCOME FOR UNRELATED INDIVIDUALS BY TOWNSHIP, 1970

	Transylvania County	Boyd Tp.	Brevard Tp.	Cathey's Creek Tp.	Dunns Rock Tp.	Eastatoe Tp.	Gloucester Tp.	Hogback Tp.	Little River Tp.
(Number of Unrelated Individuals 14 Years +)									
Under $3,000	1,203	49	921	72	32	28	21	31	49
% of Total	78	77	79	81	54	85	78	66	91
$3,000-4,999	147	5	93	6	23	5	-	10	5
% % of Total	9	7	8	7	38	15	-	21	9
$5,000-6,999	95	4	80	6	5	-	-	-	-
% of Total	6	6	7	7	8	-	-	-	-
$7,000-9,999	68	6	51	5	-	-	-	6	-
% of Total	4	9	5	5	-	-	-	13	-
$10,000-14,999	15	-	15	-	-	-	-	-	-
% of Total	2	-	1	-	-	-	-	-	-
$15,000 or more	6	-	-	-	-	-	6	-	-
Total	1,534	64	1,160	89	60	33	27	47	54

SOURCE: 1970 Census "Fifth Count" Tabulations, Bureau of the Census, U.S. Department of Commerce, Washington, D.C.

County include Olin Corporation, DuPont, American Thread, and M-B Industries. These industries provide a rather stable base of employment. Retail trade and services provide necessary shopping facilities, medical facilities and personal services for residents and visitors. Travel and tourism enterprises form an important sector of the economic base. These enterprises are varied and include recreation facilities for visitors to the mountains, summer camps for children and adolescents, and second home developments.

Income Level - In 1970 Transylvania County residents had a median family income of $8,048, significantly higher than the median family income of Region B, $6,817, or of the State of North Carolina, $7,774. Tables III-3 and III-4 shows the distribution of income for families and unrelated individuals by township.

Transylvania County had a large number of families with incomes between $7,000 and $14,999, (51%) and rather low number of families with incomes under the poverty level of $3,000 (11%). This large middle-income segment of the population is probably a result of the industrial employment in the County.

Employment, Present and Projected - Employment opportunities play a major role in determining settlement patterns and therefore, land use patterns. Residential development tends to occur near employment centers. One exception to this trend is the location of second home/retirement development, which is not dependent on employment. Table III-5 shows 1974 employment estimates divided into the following categories:

Agriculture and Forestry: This category includes workers engaged in agricultural production, forestry, commercial fishing,

TABLE III- 5

EMPLOYMENT BY PLACE OF WORK, 1974

	Total	Agriculture and Forestry	Manufacturing	Trade	Services	Other
TRANSYLVANIA COUNTY	8,080	160	3,960	950	1,230	1,780
Boyd Township	60	-	-	20	30	10
Brevard Township	5,695		2,530	730	800	1,605
Cathey's Creek Township	540	25	300	85	105	25
Dunn's Rock Township	135	10	-	20	80	25
Eastatoe Township	75	10	-	25	30	10
Gloucester Township	140	10	-	15	25	90
Hogback Township	285	40	140	20	80	5
Little River Township	1,150	35	990	35	80	10

SOURCE: Region B Population and Employment Study

hunting and trapping and related services. Agricultural products covers establishments primarily engaged in the production of crops, plants, vines or trees (excluding forestry operations); and the keeping, grazing, or feeding of livestock for the sale of livestock or livestock products, for livestock increase, or for value increase. The classification of agricultural services includes establishments primarily engaged in supplying soil preparation services, crop services, landscape and horticultural services, veterinary, and other animal services, and farm labor and management services. Forestry includes establishments primarily engaged in the operation of timber contracts, tree farms, forest nurseries, the gathering of forest products, or in performing forestry services.

Manufacturing: This category includes workers engaged in the mechanical or chemical transformation of materials or substances into new products. These establishments are usually described as plants, factories, or mills and characteristically use power driven machines and materials - handling equipment. Establishments engaged in assembling component parts of manufactured products are also considered manufacturing if the new product is neither a new structure or other fixed improvement.

Services: This category includes workers engaged in providing a wide variety of services for individuals, business and government establishments, and other organizations. Hotels and other lodging places; establishments providing personal, business, repair and amusement services; health, legal, engineering and other professional services; educational institutions; membership organizations, and other miscellaneous services, are included. Establishments which provide specialized services closely allied to agriculture, forestry, transportation, etc. are classified in their respective divisions.

Trade: This category is composed of those workers engaged in retail and wholesale trades. Retail trade employment includes those employees engaged in selling merchandise for personal or household assumption, and rendering services incidental to the sale of goods. Wholesale trade, on the other hand, includes those workers primarily engaged in selling merchandise to retailers; to industrial, commercial, institutional, farm, or professional business users; or to other wholesalers; or acting as agents or brokers in buying merchandise for or selling merchandise to such persons or companies.

Other Employment: This category consists of construction; transportation, communications, and utilities; finance, real estate and insurance; and government.

SOURCE: Office of Management and Budget, Standard Industrial Classification Manual: 1972.

TABLE III-6

EMPLOYMENT BY PLACE OF WORK, 1980

	Total	Agriculture and Forestry	Manufacturing	Trade	Services	Other
TRANSYLVANIA COUNTY	8,825	140	4,290	1,040	1,385	1,970
Boyd Township	75	-	-	25	35	15
Brevard Township	6,195	25	2,750	795	895	1,730
Cathey's Creek Township	590	20	320	95	120	35
Dunn's Rock Township	165	10	-	25	90	40
Eastatoe Township	80	5	-	25	35	15
Gloucester Township	145	10	-	15	25	95
Hogback Township	320	35	150	20	95	20
Little River Township	1,255	35	1,070	40	90	20

SOURCE: Region B Population and Employment Study

TABLE III-7

EMPLOYMENT BY PLACE OF WORK, 1985

	Total	Agriculture and Forestry	Manufacturing	Trade	Services	Other
TRANSYLVANIA COUNTY	9,325	125	4,520	1,125	1,475	2,080
Boyd Township	90	-	-	25	45	20
Brevard Township	6,510	20	2,895	845	940	1,810
Cathey's Creek Township	625	20	335	105	130	35
Dunn's Rock Township	190	10	-	35	95	50
Eastatoe Township	90	5	-	30	40	15
Gloucester Township	155	10	-	15	30	100
Hogback Township	335	30	155	25	100	25
Little River Township	1,330	30	1,135	45	95	25

SOURCE: Region B Population and Employment Study

TABLE III-8

EMPLOYMENT BY PLACE OF WORK, 1990

	Total	Agriculture and Forestry	Manufacturing	Trade	Services	Other
TRANSYLVANIA COUNTY	10,275	105	4,685	1,200	1,570	2,180
Boyd Township	115	-	-	30	50	20
Brevard Township	7,150	20	3,010	885	990	1,880
Cathey's Creek Township	695	15	340	115	140	40
Dunn's Rock Township	225	5	-	40	105	55
Eastatoe Township	100	5	-	30	40	15
Gloucester Township	175	5	-	20	30	110
Hogback Township	370	30	155	30	110	30
Little River Township	1,445	25	1,180	50	105	30

SOURCE: Region B Population and Employment Study

TABLE III-9

EMPLOYMENT BY PLACE OF WORK, 1995

	Total	Agriculture and Forestry	Manufacturing	Trade	Services	Other
TRANSYLVANIA COUNTY	10,275	100	4,825	1,320	1,655	2,365
Boyd Township	115	-	-	35	55	25
Brevard Township	7,150	20	3,105	980	1,035	2,010
Cathey's Creek Township	695	15	350	125	155	50
Dunn's Rock Township	225	5	-	40	115	65
Eastatoe Township	100	5	-	30	45	20
Gloucester Township	175	5	-	20	30	120
Hogback Township	370	25	155	30	120	40
Little River Township	1,445	25	1,215	60	110	35

SOURCE: Region B Population and Employment Study

Tables III-6 through III-9 show projected employment by place or work for each township at five-year intervals through the planning period. As was noted previously, these projections cannot anticipate future large scale industrial development. These projections were based on allocations of the previously discussed OBERS projections by analyzing factors such as new plant locations, lands which will be taken out of agricultural use, and potential locations for future commercial development.

Most sectors of the economy are expected to experience growth during the planning period. Agriculture and forestry is expected to decline somewhat as farm holdings are consolidated or are converted into urban uses. Expected growth in the trade and services sectors reflect the anticipated increase in the retirement population and seasonal residents. Manufacturing employment should continue a slow growth trend. Employment opportunities will continue to be concentrated in Brevard Township. Increase in the trade sector in Dunn's Rock Township is expected to follow residential development.

Summary

Transylvania County and the City of Brevard will continue to experience steady growth in population and employment opportunities over the twenty-year planning period. A steady influx of retired persons should be expected though not so large an inmigration as in neighboring counties. Second home development and increased use of the National Forest for recreation should result in growth in the Trade and Services sector of the economy.

CHAPTER IV

TRANSPORTATION

The location and quality of transportation systems have a major impact on the land development patterns in a county. This chapter shall discuss the entire transportation system for Transylvania County with major emphasis on the system of roads serving the county. The objectives of a transportation system and the supporting planning process shall be given first. A brief discussion of the various factors which directly affect transportation will precede an inventory of the existing transportation systems. Projected transportation requirements over the twenty (20) year planning period will be discussed and a transportation plan to meet as many of those needs as feasible devised.

Objectives Regarding Transportation

The following objectives have been adopted by Land-of-Sky Regional Council as a basis for its area planning program:

1. A transportation circulation system that is compatible with the land use plan for the Region and each county. The plan should define a functional hierarchy of streets and highways as determined by their location, traffic characteristics, volume, and function in relation to the general circulation system. It must provide for the safe, convenient and economical movement of people and goods between places of residence, employment, shopping and recreation.
2. Major thoroughfares designed and regulated to insure a free flow of traffic and to protect

the traffic-carrying capacity of the Region's principal highways.

3. A program to systematically upgrade the substandard streets and roads throughout the Region which are deemed necessary to provide adequate transportation services. A program to provide pedestrian and bicycle-ways and to protect needed future rights-of-way should be cooperatively developed by state and local governments.

4. Local government input in the process of determining state highway improvement and maintenance priorities within their respective areas of jurisdiction should be maximized. Efforts should be undertaken to improve communication between local, regional and state agencies.

These objectives should be adopted for Transylvania County as a part of the Land Use Plan and the transportation plan aimed towards fulfilling these objectives.

Factors Affecting Transportation

The major factors affecting the transportation system are basically those affecting all development within the County. Most of these factors are discussed elsewhere in this study and therefore, will be mentioned only briefly.

The physical characteristics which most directly affected the transportation system in Transylvania County are the topography, soils, and the rivers. The steep slopes which occur in many areas of the county are often occupied by soils which are unfavorable for development. Except for the southwestern corner, Transylvania County lies in the French Broad River Basin. The valleys of the French Broad and Little Rivers are the areas in which development has taken place. However, these rivers experience frequent flooding which limit development near the floor of the basin.

Manmade constraints also influence the transportation system. The designation of areas as national forests act as barriers to development. In Transylvania County, the Pisgah National Forest occupies the northeastern one-third of the County; the Nantahala National Forest, a small area in the southwestern corner. The urban area of Brevard also imposes a constraint on the development of transportation systems. Any drastic changes in the existing system would disrupt established residential and commercial areas.

Another factor is population growth and the accompanying growth in the number of vehicles. One of the most significant statistics is vehicle registration. Between 1968 and 1973, Transylvania County had an increase of 30.6 percent in the number of vehicle registrations. The result is more traffic problems, which point to the need for more improvements to the existing highways and produces greater pressure for new roads.

Survey of Existing Transportation System

The roads in Transylvania County constitute the major element of the existing transportation system. Several aspects of the system of roads will be looked at in this section, including functional classification, traffic counts, pavement widths, commuting patterns and scenic highways.

Functional Classification - In 1968 the United States Department of Transportation initiated a program of classification of all the nation's public roads and streets according to their function. The North Carolina Department of Transportation has adopted this system for their own roadways, and this system is also used in this study for classifying the roads in Transylvania County.

The state's functional classification of roads is separated into the following groupings:

- Arterial
  - Principal
  - Minor
- Collectors
  - Major
  - Minor
- Locals
  - Rural
  - Urban
- Urban Thoroughfares

The following are detailed definitions of the state's functional classifications:

1. Principal Arterials - These highways provide the primary connection between major cities of over 10,000 population and other major traffic destinations. Average trip lengths are long; consequently, the emphasis is on speed and mobility rather than land access. Interstate highways are the prime example of principal arterials. Ideally, all arterials should have the features of the Interstate System, but this is not practical from an economic standpoint.

2. Minor Arterials - These highways supplement the principal arterials providing service to all other cities of more than 1000 population. Generally, trips are fewer and shorter in length than for major arterials. Major county-to-county movements not served by principal arterials are served by minor arterials. The emphasis is still on traffic mobility, but the lower traffic volumes do allow some land access. Normally, two traffic lanes are adequate, but some four-laning may be needed in or near cities.

3. Collectors - These highways serve the major trip movements within a single county and, in some cases, between adjacent counties. Average trip lengths are much shorter than those on arterial highways. Emphasis for this system is on safe traffic operation rather than speed. These routes include those US and NC numbered routes which are not designated arterials and most major secondary roads. These routes are divided into major collectors and minor collectors.

   a. Major Collectors - These routes should provide services to any county seat not on an arterial route to the larger towns not directly served by the higher classifications, and to other traffic generators of equivalent intra-county importance, such as consolidated schools, shipping points and county parks; link these places with nearby larger towns or cities, or with routes of higher classification; and should serve the more important intra-county travel corridors.

b. Minor Collectors - These routes should be spaced at intervals consistent with population density to collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road; provide service to the remaining smaller communities; and link the locally important traffic generators with their rural hinterland.

4. Urban Thoroughfares - This classification is composed of a basic system of streets (that move traffic) within an urban area. The responsibility for providing for the necessary improvements is shared by the state and the cities, with the state assuming a percentage of the costs on the more important ones. Within this classification urban roads may be further broken down into urban arterials and urban collectors.

   a. Urban Arterials - These routes should carry the major portion of trips entering and leaving the urban area, as well as significant intra-area trips. In large urban areas these may be divided into principal and minor arterials.

   b. Urban Collectors - These routes distribute trips from the arterials to ultimate destinations which may be on a local or collector street and collect traffic from the local streets, channeling it into the arterial systems. The collector system provides both land access and service for local traffic movements within residential neighborhoods, commercial areas, and industrial areas.

5. Locals - These are the remaining roads in rural and urban areas whose function is to provide access to the abutting land. These facilities deliver traffic to collectors or dispurse traffic away from roads possessing a higher classification.

Transylvania County's functionally classified system is composed of 377 miles. There are no interstates or principal arterials in the county, and the minor arterial mileage is 71 miles, or 18 percent of the county's total mileage. Collector roads in the county total 66 miles, or 17 percent of the total mileage. (See Figure IV-1)

The following list separates the functionally classified roads in Transylvania County by category:

Principal Arterials	Minor Arterials	Major Collectors	Minor Collectors
None	US 64 (northeast of Brevard & within the city limits)	US 64 (southwest of Brevard)	NC 281
	US 178	US 276 (south of Brevard)	SR 1103
	US 276 (north of Brevard & a small section in southern Transylvania County)	NC 215	SR 1107
	NC 280	SR 1528	SR 1110
	Blue Ridge Parkway	SR 1533	SR 1113
		SR 1536	SR 1116
		SR 1540	SR 1149
		SR 1560	SR 1326
			SR 1331
			SR 1502
			SR 1504

Average Daily Traffic Flow - The most common measure used in reporting the traffic on a highway is the average daily traffic flow (ADT). The ADT of a given roadway is estimated from short counts adjusted by factors obtained at one or more continuous counting stations. The 1974 ADT for selected points on the major roads in the County are shown in Table IV-1. Transylvania County's highest 1974 ADT's are located along N.C. 280 and U.S. 64 as they appraoch and leave Brevard. The ADT's in Transylvania County range from 80 along N.C. 215 to 15,000 on U.S. 64 in the City of Brevard.

In summation, average daily traffic flow data are one factor necessary in judging whether deficiencies exist along any stretch of road. If the traffic volume is unusually high for a section of road, based on its design capacity and level of service, it might be necessary to widen, add more lanes, or make some other

TABLE IV-1

CURRENT AND PROJECTED AVERAGE DAILY TRAFFIC VOLUMES, TRANSYLVANIA COUNTY

ADT LOCATION POINT ON FIGURE IV-1	1974	1985	1995
1	800	1,090	1,440
2	1,500	2,040	2,690
3	700	950	1,260
4	180	250	350
5	1,880*	2,630	3,470
6	750	1,020	1,350
7	300*	420	560
8	80*	110	150
9	2,450	3,330	4,390
10	1,300	1,760	2,330
11	2,900	3,900	5,200
12	400	540	720
13	3,200*	4,470	5,900
14	3,900*	5,450	7,200
15	6,300	8,550	11,300
16	5,800	7,870	10,400
17	2,500	3,390	4,390
18	620*	870	1,150
19	2,900*	4,050	5,360
20	15,000	20,360	26,900
21	10,000	13,570	17,900
22	6,000	8,140	10,800
23	3,600	5,000	6,600
24	4,400	5,800	7,000
25	2,900	5,000	6,600
26	2,300	3,120	4,130
27	450*	630	830

*Indicates that 1974 ADT was not available and data used in its place is either 1973 or 1972 ADT's.

Sources: North Carolina Department of Transportation and Highway Safety, 1973 and 1974 data.

Land-of-Sky Regional Council, 1975 ADT Projections.

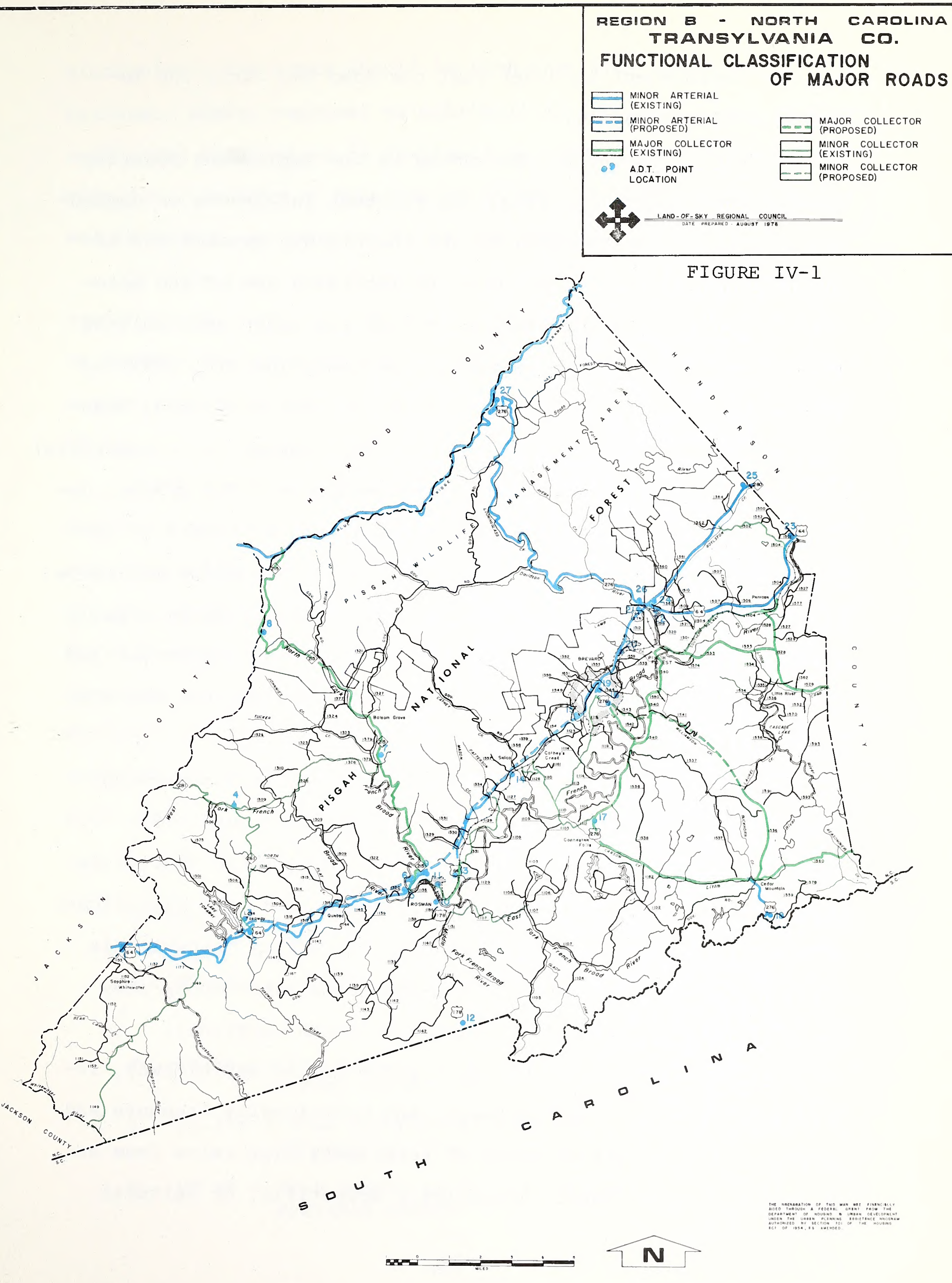

FIGURE IV-1

THE PREPARATION OF THIS MAP WAS FINANCIALLY AIDED THROUGH A FEDERAL GRANT FROM THE DEPARTMENT OF HOUSING & URBAN DEVELOPMENT UNDER THE URBAN PLANNING ASSISTANCE PROGRAM AUTHORIZED BY SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

type of improvement in order that the road can carry the increased volumes safely.

Commuting Patterns - According to the Employment Security Commission of North Carolina, the greatest influences on community patterns in North Carolina are the highway systems and industrial development along with the increased use of the automobile. The Commission also feels that the major metropolitan areas will continue to draw workers as commuting will still be acceptable in spite of rising fuel costs. The continuing transition of North Carolina from an agrarian economy to an industrial one has facilitated the trend toward commuting. The gradual decline in the number of small farms has increased travel to industrial sites for jobs by rural residents. The major influence on employee commuting patterns are industries within an area. Other influences on commuting patterns are large commercial and administrative centers, medical complexes, educational centers, and institutions of higher education.

In 1970, Transylvania County had more workers commuting into the county (1,665) than they had commuting out (583). This is due primarily to workers attracted to large industries such as Olin, Dupont, and American Thread. The most significant in-commuting pattern is from Henderson County to Transylvania County. The most significant out-commuting patterns is from Transylvania County to Pickens County (South Carolina).

Scenic Highways - A scenic highway may be any highway, including roads, streets, parkways, and occasionally freeways and expressways, traversing areas of relatively high value from an aesthetic, recreational, historical, scientific, or cultural standpoint. The areas should be such that they would merit national, state, regional or metropolitan recognition and provide sufficient interest to be destinations themselves. They may provide for a variety of experiences in terms of changes in terrain and landscape, as is peculiar to the Region.

At this time, the Blue Ridge Parkway is the only highway within Transylvania County that is classed as a scenic highway. It borders the northern edge of Transylvania County, running in a southwest to northeast direction for a total distance of about 10 miles.

There are certain other highways within Transylvania County that have been recommended for scenic highway designation. These recommendations were made in a study entitled, A Quest for Mountain Resources Management Policies by the North Carolina Office of State Planning. Some of these highways also traverse other counties, but it is essential to give the whole length of the designated highway to show where County highways tie into the designated area. The following is a list of the proposed scenic highways:

1. NC 215 - from Rosman to US 276, traversing Transylvania and Haywood Counties
2. US 276 - from US 64 to NC 215, traversing Transylvania and Haywood Counties
3. SR 1533, SR 1536, SR 1528 - from SR 1512 to US 276, traversing Transylvania County
4. US 64 - from Rosman to Franklin, traversing Transylvania, Jackson, and Macon Counties
5. US 178 - from South Carolina State Line to Rosman, traversing Transylvania County
6. US 64 - from Rosman to US 276, traversing Transylvania County

7. US 276, SR 1103, SR 1110 - from South Carolina State Line to US 64, traversing Transylvania County

8. SR 1560, SR 1106, US 25 - from US 276 to South Carolina State Line, traversing Transylvania and Henderson Counties

Elements used in determining what highways should be designated as scenic highways were:

1. Quality - scenic, historical or cultural characteristics of such quality that they merit state or national recognition plus frequent opportunities for the development of complementary roadside facilities.

2. Variety - a variety of terrain, type of landscape and land use activity, unique elements not generally found in highway travel.

3. Accessibility - access to or link between existing or proposed parks, other public recreation areas, or points of scenic, cultural, historical or scientific interest, with limited access points to maintain the character of the facility.

4. Location and Geographic Distribution - cover as wide a geographical area as possible, often paralleling the approximate alignment of major state or interstate routes or swinging in a loop around such routes.

5. Design and Safety - geometric design which exhibits graceful, groundfitting horizontal and vertical alignment and accommodates the anticipated traffic volumes safely and efficiently.

6. Adaptability to Development - the environs relatively free of incompatible commercial or restrictive development within the minimum right-of-way width.

7. Compatibility - the coordination of scenic highways with other outdoor recreation, aesthetic, and conservation objectives.

8. Competing Uses - the utilization of the scenic highway by other highway users not interfering with the primary recreational objectives of the roadway.

Airports - Transylvania County is served by the Asheville Municipal Airport in Buncombe County. The Asheville Airport is the primary airport for Western North Carolina. It is, by far, the most extensively developed airport in Western North Carolina, having a 6,500-foot long runway, an instrument landing system, an air traffic control tower, and a terminal radar instrument approach and departure control using airport surveillance radar. The Asheville Airport handles air carrier operations for Delta, United, and Piedmont Airlines, and accommodates substantial general aviation activities.

Railroads - Transylvania County is served by the Southern Railway Company, which connects the County with all of North Carolina and surrounding states. Southern Railway offers freight service with a main line between Asheville and Salisbury-Spencer. Asheville is also the major shipping point, offering daily switching service and piggyback service.

Within Transylvania County, the Southern Railway parallels the course of the French Broad River from Henderson County through Brevard to Rosman, serving industries along the way, such as American Thread. The freight station in Brevard was recently closed, so all business will be conducted with the Asheville office.

Mass Transit - Transylvania County is served by one major bus line and two minor lines. Continental Trailways serves Brevard, providing suburban bus service to Asheville for transfer to other points nationwide. The larger of two minor bus lines, Young Transport Company provides daily service to Brevard and other towns in Region B. The Rosman Bus Line is primarily a commuting service which provides transportation for workers from Rosman to the Olin Corporation plant in Brevard.

In early 1975, Transylvania County attempted to secure funding from the U.S. Department of Transportation for a "Rural Transportation Demonstration Project." The project would have used county staff and van-type vehicles to accomplish the following objectives:

1. To provide a reliable, efficient and flexible transportation service which is tailored to the specific needs of the County.
2. To coordinate resources and address needs related to transportation in such a manner as to eliminate unnecessary duplication of efforts and maximize utilization of scarce resources.
3. To maintain user costs at an acceptable level and keep total trip times within acceptable limitations.
4. To develop a service which is consistent with similar services throughout the Region and one that can be coordinated to gain efficiency and flexibility in travel beyond the County boundaries.
5. To gather the information necessary to implement effective long-term rural transportation programs in other regions throughout the country.

Unfortunately, the program under which the project could have been funded, was redesigned to emphasize capital outlays rather than operating expenses, thereby eliminating the type of program Transylvania County needed.

Currently, Transylvania County does provide transportation for several groups of citizens. Children participating in the Child Development program and elderly persons participating in the Nutrition and Day Activities programs are picked up at their residences and taken to the program sites and are then returned to their homes. The county also provides transportation for handicapped persons. Handicapped children are taken to the public schools and handicapped adults who are clients of the Transylvania County Workshop to the workshop for training.

Anticipated Transportation Deficiencies

This section attempts to project some statistics which most directly bear upon the transportation system for the year 1995. The projected statistics will point out major deficiencies which will occur over the twenty-year period. The standards used in this section are drawn from two publications - A Policy on Arterial Highways in Urban Areas and A Policy on Geometric Design of Rural Highways, both by the American Association of State Highway Officials.

Average Daily Traffic Flow - Average daily traffic flow is an important criteria in judging whether a highway is meeting daily demands. It is recommended that two-lane highways which carry a traffic volume of 5,000 or more be considered for four-lane status; and on highways with volumes of 8,000 or more vehicles per day, a four-lane facility should be required. Four-lane facilities that are non-expressway type facilities begin to be justified for upgrading to an expressway status (a divided arterial highway with full or partial control of access) when traffic volumes exceed 18,000 and are deemed necessary when volumes exceed 28,000.

Table IV-1 shows the estimated ADT's for major roads in Transylvania County for the years 1985 and 1995. The highest ADT's will be on the roads entering and leaving Brevard. Table IV-2 shows when deficiencies will occur for the major highways.

TABLE IV-2

PRESENT AND PROJECTED DEFICIENCIES DUE TO ADT

5,000-8,000 ADT on 2-lane facility	1974-1980	1980-1985	1985-1990	1990-1995
Principal Arterials	—	—	—	—
Minor Arterials	US 64 from junction of NC 280 to Penrose	US 64 - from Penrose in Transylvania County to Horseshoe in Henderson County	—	NC 280 - from the junction of US 64 US 276 in Transylvania County to the junction of NC 191 in Henderson County US 64 - from Rosman to the junction of US 276 in Brevard
Collectors	US 276 - within eastern city limits of Brevard to Connestee Falls	—	—	—

Source: North Carolina Department of Transportation and Land-of-Sky Regional Council, 1974.

TABLE IV-3

DEFICIENCIES DUE TO PAVEMENT WIDTH

Highways	Below 20 Feet	20 - 24 Feet
Principal Arterial	—	—
Minor Arterial	US 64 - 18' between junction of NC 281 and Jackson County line, and also between Rosman and Brevard	US 64 - 20' between Rosman and junction of NC 281
	US 178 - 18' whole length	NC 280 - 20' for whole length
Collectors	NC 281 - 14'	
	NC 215 - 16', southern half of highway	NC 215 - 20' northern section of highway in Transylvania County
	US 276 - 18' south of Brevard	

Source: North Carolina Department of Transportation, 1973.

Pavement Width - Another major type of deficiency is inadequate pavement width. A generally accepted minimum is twelve feet per lane or twenty-four feet for a two lane road. Many major roads in Transylvania County have pavement widths of less than 24 feet. In fact, many have pavement widths of less than twenty feet. Table IV-3 shows existing pavement width deficiencies.

Road Design - A third type of deficiency results from poor road design. In Transylvania County, roads have generally been built where topography was suitable and this has resulted in many winding roads, which slow traffic down. Improvements of this problem often involves considerable changing of the natural contours of land causing environmental damage if improperly done.

Needed Improvements - The following improvements necessary to correct the major deficiencies in the transportation system are recommended by the Transylvania County Planning Board. The North Carolina Department of Transportation is urged to include these improvements in its Seven Year Improvement Plan.

1. US 276 - Upgrade to a 24 foot facility from Brevard to the South Carolina line.
2. US 64 - Upgrade to a 24 foot facility from Rosman to the junction of NC 281.
3. NC 281 - Hard surface and widen the highway to a 24 foot facility from SR 1307 to the Jackson County line.
4. US 178 - Upgrade to a 24 foot facility from Rosman to the South Carolina line.
5. US 64 - Upgrade to a four-lane facility from the junction of NC 280 - US 276 to the community of Penrose.
6. NC 215 - Upgrade to a 24-foot facility from the junction of US 64 to the community of Balsam Grove.

7. US 64 - Upgrade to a 24-foot facility from the junction of NC 281 to the Jackson County line.
8. NC 281 - Upgrade to a 24-foot facility from the junction of US 64 to the junction of SR 1307.
9. NC 215 - Upgrade highway in Transylvania County to a 24-foot facility from the Haywood County line to the community of Balsam Grove.
10. Williamson Creek Road - New road from S.R 1541 to S.R. 1536.

Transportation Plan

Thoroughfare Plan - The transportation plan for Transylvania County will continue to show the roads system as the major element. Figure IV-2 shows the Thoroughfare Plan for major roads in 1995. It has been assumed here that the relocation of US 64 from Brevard to Rosman will be completed as scheduled. The following list shows the proposed thoroughfare plan by functional classification in Transylvania County.

Principal Arterials	Minor Arterials	Major Collectors	Minor Collectors
None	US 64	NC 215	NC 281
	US 178	SR 1528	SR 1103
	US 276	SR 1533	SR 1109
	NC 280	SR 1536	SR 1110
	Blue Ridge Parkway	SR 1540	SR 1113
		SR 1560	SR 1116
			SR 1127
			SR 1149
			SR 1309
			SR 1326
			SR 1331
			SR 1504

This functional classification also assumes correction shown on Tables IV-2 and IV-3.

Figure IV-2 also shows the classification of urban thoroughfares in Brevard for the year 1995. It has been assumed

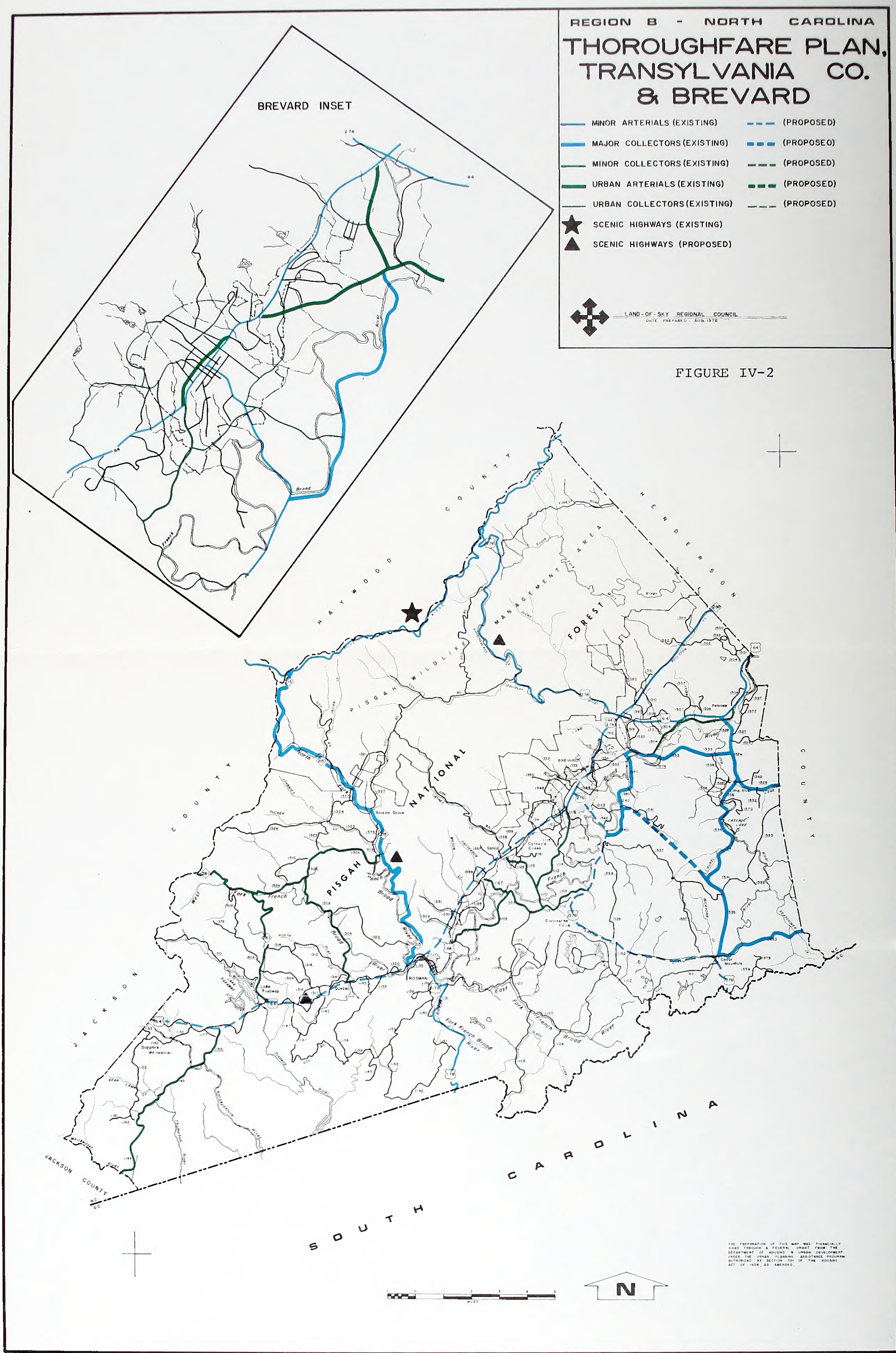
REGION B - NORTH CAROLINA
THOROUGHFARE PLAN, TRANSYLVANIA CO. & BREVARD
MINOR ARTERIALS (EXISTING) (PROPOSED)
MAJOR COLLECTORS (EXISTING) (PROPOSED)
MINOR COLLECTORS (EXISTING) (PROPOSED)
URBAN ARTERIALS (EXISTING) (PROPOSED)
URBAN COLLECTORS (EXISTING) (PROPOSED)
SCENIC HIGHWAYS (EXISTING)
SCENIC HIGHWAYS (PROPOSED)
LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED - AUG. 1976
BREVARD INSET
French
Broad
River
JACKSON COUNTY
HAYWOOD COUNTY
HENDERSON COUNTY
SOUTH CAROLINA
PISGAH NATIONAL
PISGAH WILDLIFE MANAGEMENT AREA
FOREST
BREVARD
ROSMAN
Penrose
Cedar Mountain
Connestee Falls
Cathey's Creek
Selica
Boylston Grove
Lake Toxaway
Sapphire
Whitewater
Davidson River
North Fork French Broad
West Fork French Broad River
East Fork French Broad River
N.C.
S.C.
MILES
N
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FIGURE IV-2

here that the pattern of streets and roads will continue to develop without radical changes.

Urban Arterials

South Caldwell Street
Pisgah Forest Road
Vanderbilt Road (SR 1512)

Urban Collectors

Barclay Road
Cashiers Valley Road
Chestnut Street
Elm Bend Road
Fisher Road
French Broad Street
Gallimore Road
Illahee Road
West Main Street
McLean Road
Morgan Street
Morris Road
Neely Road
Nicholson Creek Road
Park Avenue
Parkview Road
Whitmire Street

Although the 1965 Brevard Thoroughfare Plan recommended a bypass around Brevard, the N. C. Department of Transportation presently has no plans for construction of such a bypass. Development has occurred in the proposed path of the bypass and future alignment would be constrained by the French Broad River as well as developed areas. The expense of such a facility coupled with existing development suggests that the bypass would not be feasible within the next twenty years and therefore, no bypass has been included in the Transportation Plan.

Scenic Highways - The following highways are considered to be of significant scenic value and designation of these as scenic highways is recommended:

1. NC 215 - from Rosman to US 276, traversing Transylvania and Haywood Counties,
2. US 276 - from US 64 to NC 215, traversing Transylvania and Haywood Counties,
3. US 64 - from Rosman to Franklin, traversing Transylvania, Jackson, and Macon Counties.

Airports - It is expected that the Asheville Airport will continue to grow and will provide adequate passenger service and limited freight service throughout the planning period. The growth of a major general-aviation airport is not expected in Transylvania County. However, small strips should be constructed to meet local industrial and resort area needs.

Mass Transit - The establishment of a rural transportation system to serve the citizens of Transylvania County is recommended. Such a system is needed to aid client groups presently not specifically served, especially low-income persons. The system should provide transportation from the rural areas of the county to the urban services available in Brevard. In order to keep user costs reasonable, the system would require large subsidies from the county and/or another agency.

CHAPTER V

WATER AND WASTEWATER TREATMENT FACILITIES

The development of urban areas is dependent on the provision of adequate water and sewage treatment facilities. Individual wells and sewage disposal systems are suited for scattered development in the rural areas of the County, but are not appropriate for development at urban densities. This chapter will inventory the existing water and sewage treatment facilities and examine the plans for expansion of these facilities. Projections of needs until the year 1995 are included to show the size of the expansions.

Water Supply and Distribution Systems

The provision of a safe and adequate supply of water is fundamental to urban development. The health and safety of the community is dependent on water for domestic and commercial use as well as fire fighting.

In Transylvania County, Brevard and Rosman have municipal water systems. Numerous community systems serve residential developments and mobile home parks through wells. The industries in the County obtain water from both wells and surface waters, such as the Davidson and Little Rivers. The residences scattered throughout the County obtain their water mainly from private wells, although some homes use springs. (See Figure V-1)

Brevard - Brevard presently obtains its water from two sources, Kings Creek and Nortons Creek, with a combined two-year low flow yield of about 1.3 MGD and twenty and forty year low flow yields of .73 MGD and .63 MGD. Sonata Lake on the Brevard Music Camp property is used as an emergency supply. The only treatment needed is disinfection by chlorination because the two creeks are of A-1 water quality and the watershed is protected from contamination. Storage facilities consist of a 750,000 gallon raw water reservoir and two 1,000,000 gallon finished water reservoirs. The existing system serves approximately 7,000 people through 2,043 connections.

Brevard has found it necessary during the past several years to call on its emergency source with increasing regularity during periods of high demand and drought. The low flows of Kings Creek and Nortons Creek are insufficient to provide adequate finished water for the city. An analysis of area hydrology indicates that the existing drainage areas of the two creeks without on-stream storage is inadequate to meet current requirements and that the shortage of the past several years were not isolated events, but can be expected to recur with potentially greater severity at future times.

The existing Brevard water system has had two additional problems, inadequacy of fire flows and excessive leakage. The system cannot provide required fire flows for Brevard High School or for the commercial area north along U.S. 64. The distribution system leakage and unaccounted-for use exceeded the metered consumer usage until recently. These two problems are due to the existing distribution system and correction of them does not depend on a new source of water. The city has recently completed a leak survey and repair program and plans to improve the distribution system to provide adequate fire flows.[1]

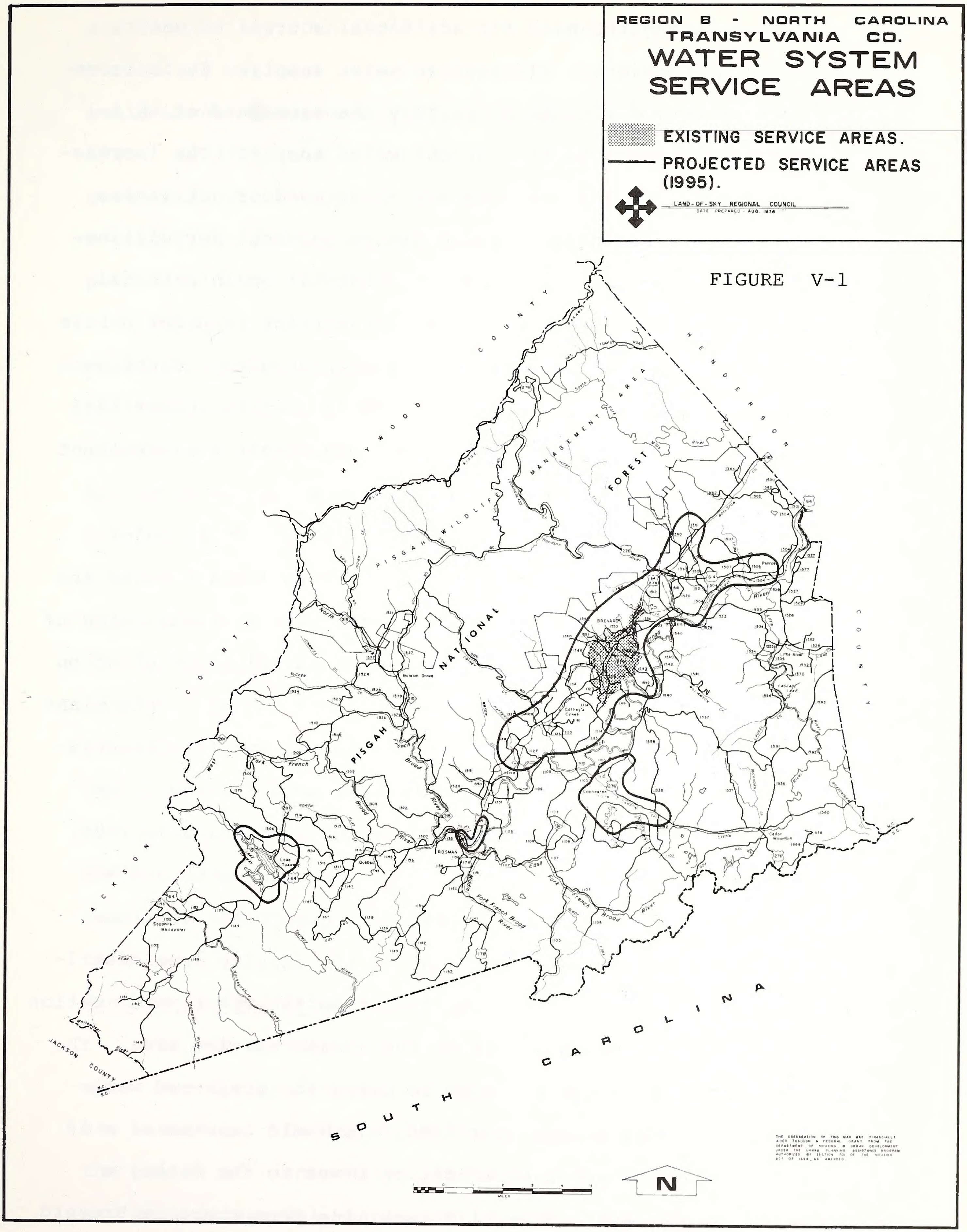

FIGURE V-1

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Anticipating the need for additional sources of water, the city is planning an alternative water supply. It is becoming increasingly difficult to protect the watershed of an A-1 quality stream, such as the current water supply. The increasing interest in hiking, camping and other outdoor activities on the part of the public require almost constant surveillance of the entire watershed to prevent accidental or intentional pollution of source waters. The Forest Service is under public pressure to open watersheds for multi-purpose uses. Since such continuous protection is rarely obtainable, health authorities are inclined more and more toward the requirement for treatment of all water supplies, regardless of source.

The use of the French Broad River, or one of its major tributaries, as a source of water for Brevard appears to be the preferable alternate. Plans call for the staged construction of a 3.0 million gallons per day (MGD) water purification plant on Cathey's Creek at the upper end of the service area. This plant would consist of a chemical mixing and dosing system, flocculation basin, sedimentation basin and rapid sand filters. The first stage of construction, projected for completion in 1980, would include the basic water purification plant with a 2 MGD capacity, a high service pump station to pump water from the plant through the transmission line to the service area distribution system and a transmission line from the water purification plant to the various sub-areas of the system service area. The transmission line would be sized to carry the projected water demand of the area in the year 2000. It would consist of a 16 inch line from the water purification plant to the Cathey's Creek Community, reduced to a 12 inch line from there to Brevard and reduced again to eight inch lines from Brevard to Pisgah Forest and Penrose. (See Figure V-1). This expanded system would serve approximately 11,200 persons with completion around 1980. By 1995, the system would be serving approximately 17,900 persons in the service area. To serve the projected population beyond 1995, the water purification plant would have to be expanded to 3 MGD capacity.

Rosman - The Town of Rosman is currently served by two small private water systems, the Rosman Water Association and the Owens Water System. The Rosman Water Association serves approximately 190 people through 54 connections. The Owens Water System serves about 106 people through 30 connections. The remainder of the residences obtain water from individual systems which are known to be inadequate. The Town has completed technical and financial plans for development of a new water system. The facilities include the development of wells to provide a supply of 85,000 gallons per day, a 1,000,000 gallon storage reservoir, and distribution lines of various sizes (Figure V-1). The system will serve approximately 480 persons through 211 connections. This system should adequately serve the Town of Rosman through 1995. Additional wells would take care of unexpected growth in the Rosman area with appropriate distribution line extensions.[2]

Wastewater Collection and Treatment Systems

For the development of an area at an urban density, adequate facilities for the collection and treatment of wastewater are essential. Inadequate systems can pose a serious threat to the health of a community. There are two municipal, four private, and four industrial wastewater treatment systems in Transylvania

County. In addition, the Olin Corporation has a 30-million-gallon-per-day primary plant at Pisgah Forest to treat industrial wastewater. Table V-1 is a summary of the major wastewater treatment facilities in Transylvania County.

Brevard - The Brevard Wastewater System Service Area is illustrated on Figure V-2. It consists of a collection system serving all areas within the city limits and a 1.5 MGD extended aeration type treatment plant. Effluent from the plant is discharged into the lower end of Kings Creek. The Brevard system currently serves about 5,400 people through 1,800 connections. Average daily flow at the plant is 0.700 MGD and maximum daily flow is 1.60 MGD.

The high maximum daily flow, 2.28 times the average daily flow, indicates the Brevard system's major problem, high infiltration/inflow. It is reported that during periods of wet weather, flow in the collection system is so heavy that pumping stations and treatment plant must be bypassed for protection. Correction of the infiltration/inflow problem is necessary before detailed planning and engineering can be done on the expansion of the system.[3]

General plans for the expansion of the wastewater collection and treatment system fall into two phases. The first phase would be completed in 1977-1978 and will include extensions to the existing system in the Lambs Creek and Nicholson Creek drainage areas. This would extend service to Pisgah Forest to the north and the boundary of Brevard Township to the south. The second phase of the expansion would come after intensive development has occurred in the served areas. This phase would include an inceptor along the "Glady Branch" of Cathey's Creek to a southern pump station. Outside of these areas new construction should be limited to large lot development on individual sites where septic tanks are feasible and cluster developments where community sewage treatment facilities are provided.[4] (See Figure V-2).

Rosman - Rosman is served by a 40,000 - GPD extended aeration type sewage treatment plant which discharges its effluent into the French Broad River. The system serves approximately 250 people, currently receiving an average daily flow of 34,000 GPD. The projected wastewater flow indicates the treatment plant capacity will be adequate until the mid 1980's. Future growth in the Rosman area will require expansion of the treatment plant as well as extension of the interception lines. (See Figure V-2).

Private and Industrial Systems

The most significant industry in Transylvania County, in regards to wastewater generation, is the Olin Corporation in Pisgah Forest. A manufacturer of paper and packaging films, Olin presently discharges about 24 million gallons per day of industrial wastewater into the French Broad River after secondary treatment in a 30 MGD plant. This discharge does not, however, include black liquid wastes which are disposed of by incineration. Domestic wastewater from the plant is treated in a 180,000-gallon-per-day secondary treatment plant and the effluent from this plant is also discharged into the French Broad River.

Another major industry in Transylvania County is the E. I. Dupont plant on U. S. 276 south of Brevard. This plant, which manufactures X-ray film, treats its wastewater in a 2.5 MGD plant, discharging its effluent into Little River. The American Thread Company, on U. S. 64 west of Rosman, treats its domestic waste-

WASTEWATER TREATMENT FACILITIES
TRANSYLVANIA COUNTY

SYSTEM NAME	DESIGN VOLUME (MGD)	AVG. DAILY FLOW (MGD)	RECEIVING WATERS	TOTAL NUMBER CONNEC-TIONS	POPU-LATION SERVED
Brevard City	1.500	0.700	King Creek	1.800	5,400
Rosman Town	0.040	0.034	French Broad	82	250
American Thread Co.	0.015	0.008	Galloway Creek		
Connestee Falls	0.300		French Broad		
Connestee Falls	0.020		Lower Creek		
E.I. Dupont	2.500	1.100	Little River		
M.B. Indus-tries	0.013	0.001	West Fork French Broad		
Olin Corp.	30	24	French Broad		
Olin Corp.	0.180	0.120	Davidson River		
Pisgah M.H.P.	0.010		Davidson River		
USFS Schenk & Davidson River Flats Rec. Areas	0.055	0.028	Davidson River		

Note: Spaces have been left blank where information is not available.

Sources: Survey of Operators 1973-74 and North Carolina Department of Natural and Economic Resources, Office of Water and Air Resources, 1974.

water in a 15,000-gallon-per-day plant discharging into Galloway Creek. A rapidly developing "second home" community, Connestee Falls, has a 300,000-gallon-per-day wastewater treatment plant discharging its effluent into the French Broad River and a 20,000 gallon-per-day plant discharging into Lower Creek.

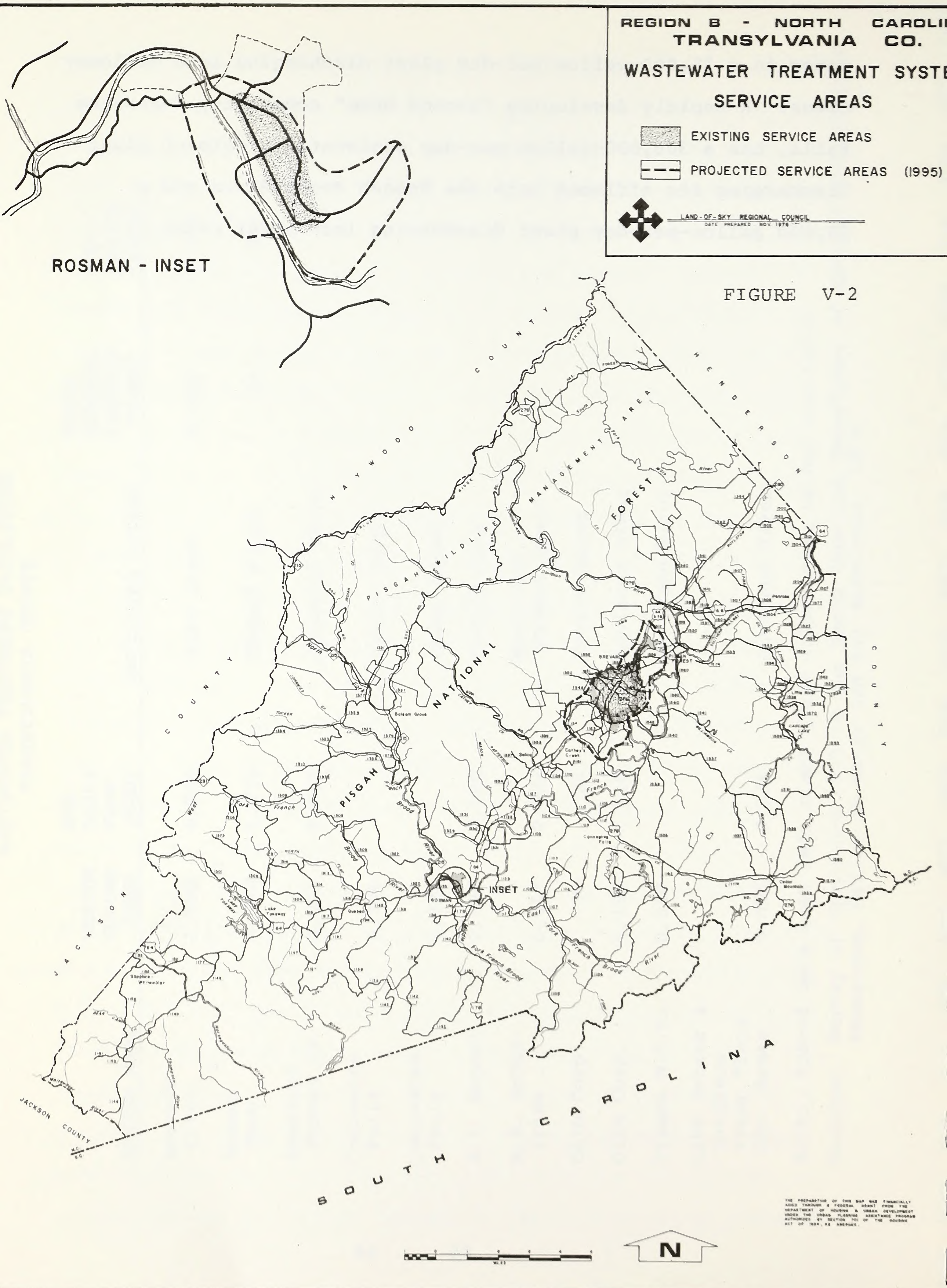

REGION B - NORTH CAROLI
TRANSYLVANIA CO.
WASTEWATER TREATMENT SYSTE
SERVICE AREAS
EXISTING SERVICE AREAS
PROJECTED SERVICE AREAS (1995)
LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED - NOV. 1976
ROSMAN - INSET
HAYWOOD COUNTY
HENDERSON COUNTY
JACKSON COUNTY
SOUTH CAROLINA
PISGAH WILDLIFE MANAGEMENT AREA
FOREST
PISGAH NATIONAL
PISGAH
INSET
ROSMAN
BREVARD
PISGAH FOREST
Penrose
Little River
Cathey's Creek
Balsam Grove
Lake Toxaway
Quebec
Sapphire
Whitewater
Connestee Falls
Cedar Mountain
Cascade Lake
West Fork French Broad River
North Fork French Broad River
East Fork French Broad River
Middle Fork French Broad River
French Broad River
Davidson River
N

FIGURE V-2

FOOTNOTES

[1] Cummings Engineers, Inc., Comprehensive Water Study, Brevard North Carolina (Asheville, N. C., 1975).

[2] Cummings Engineers, Inc., Region B Water and Wastewater Plan, Part II (Asheville, N. C., 1975), p. 7.

[3] Cummings Engineers, Inc., Region B Water and Wastewater Plan, Part I (Asheville, N. C., 1974), p. 71.

[4] Cummings Engineers, Inc., Wastewater Facilities Construction Plan (Sec. 201), Asheville, N. C., 1976)

[5] Cummings Engineers, Inc., Part I, p. 68.

CHAPTER VI

EXISTING LAND USE PATTERNS

The existing land use patterns which have been established over a number of years are a major component in developing the Land Use Plan. Public and private investment in structures and other land improvements on the land must be considered when determining the most appropriate use of this land. Rarely have previously developed lands reverted to more natural open-space uses, such as agriculture or forests. In this chapter, the existing land use patterns in Transylvania County and in the Brevard planning jurisdiction will be analyzed. This analysis will be based on data collected by windshield survey in November, 1974, and June, 1975, for Transylvania County, and in July 1975, for the Brevard planning jurisdiction. The major land holdings in the county, such as the National Forest, will also be discussed in this chapter, as they impose constraints on future development.

Existing land use patterns in the County will be discussed first. The land use patterns within the Brevard planning jurisdiction will then be analyzed in greater detail due to the density of development in this area.

Transylvania County

During the summer of 1975, the Office of State Planning prepared a series of maps of existing conditions in Transylvania

County. Among the maps prepared was a map of existing land use based on data supplied by Land-of-Sky Regional Council. This map (Figure VI-1 contained in envelope) does contain an error in the color registration between the legend and the map. The lighter blue-green shown on the map designates deciduous and mixed forests and the darker blue-green, coniferous forests.

The following classification system was used to classify the land in the county:

Industrial - lands used for the manufacture of goods.

Commercial - lands used for the sale of goods and services.

Public and semi-public - lands used for clusters of public buildings, including churches, schools, and hospitals. Individual churches in rural areas were not mapped separately.

Residential - lands lying within urban areas which are used for residential purposes.

Rural settlements - lands containing clusters of rural residential development, but at a density of fewer than 500 residents within a square mile or an average population density of less then one family per acre.

Low intensity uses - lands used for purposes such as summer camps, golf courses, and public parks. These establishments are further divided into those operated as commercial ventures and those operated by public or quasi-public organizations.

Other lands were divided according to vegetative cover as shown from air photos. These categories are shown on Figure VI-1. As the Brevard planning jurisdiction will be discussed in greater detail, the following analysis will exclude those areas.

Industrial - The largest manufacturing concern located outside the Brevard area is the DuPont plant located in the

Little River area. Other manufacturing concerns include the American Thread and M-B Industries plants located near Rosman. Transylvania County has been fortunate in that most of the industries in the county have not caused any serious pollution problems and have provided steady employment.

Commercial - Outside the Brevard Planning Jurisdiction and the Town of Rosman, commercial operations are very scattered. Most of these are convenience grocery-gas station enterprises which cater to the residents of a particular community and sometimes to the traveling public. These operations sometimes pose a problem by being located too close to the road and not providing well-defined ingress-egress points. This may cause traffic hazards with persons parking on or near the road right-of-way.

Public and quasi-public - Very little land outside the incorporated areas has been developed for public and quasi-public uses. The National Aeronautic and Space Administration (NASA) tracking station near the community of Balsam Grove is the largest developed public use. A few scattered sites have been developed for public schools. The numerous churches scattered throughout the county have not been designated on the map due to the small size of the individual parcels involved. No significant problems have been experienced with these land uses to date.

Residential - As this category occurs, by definition, only in urban areas, all lands so classified will be discussed later.

Rural settlements - Lands along public roads have been developed as rural settlements in several parts of the County. The largest of the rural settlements is the Town of Rosman. Most of the residential development in the Rosman area consists of scattered single-family residences. Numerous substandard dwellings, both vacant and inhabited, are located in the Rosman area. A small commercial concentration is located along U.S. 178 near the intersection of U.S. 64 and U.S. 178. Other scattered commercial operations are located along U.S. 64. Some commercial structures have been abandoned and allowed to deteriorate. Near the Town of Rosman are two industrial concerns, a pulpwood collection yard for Champion Paper Company and American Thread Company. The pulpwood collection yard is located adjacent to the French Broad River on lands which lie partially within the floodplain.

The other rural settlements, often referred to as communities include Penrose, Little River, Cedar Mountain, Dunn's Rock, Cathey's Creek, Balsam Grove, Silversteen, Toxaway, and Sapphire-Whitewater. Many of these communities have very active community centers which provide a focus for a neighborhood spirit. Several large subdivisions have also begun to develop in the county and these will also be classified as rural settlements. The subdivisions of Sherwood Forest, Connestee Falls, Glen Cannon, and Lake Toxaway are best-known examples of this. Numerous other small subdivisions are located throughout the county.

One of the most severe problems regarding rural settlements has been improper development practices which have led to severe soil erosion and sedimentation of streams. The county has adopted a local Soil Erosion and Sedimentation Control Ordinance which will be enforced by the City/County Department of Inspections. Frequently, however, damage has already occurred before any control measures are enforced.

Another problem is the location of residences too close to the road. This can interfere with the paving of the road by the Department of Transportation as adequate right-of-way cannot be obtained.

Low-Intensity Uses - Two particular types of land use dominate the category. Golf courses, which are frequently associated with residential subdivisions, and summer camps for children and adolescents are the major low-intensity uses. These have generally been an asset to the county and have not posed any serious problems. The summer camps are especially concerned with maintenance of the scenic natural environment.

Major Land Holdings - Several large tracts of land in Transylvania are held by various government agencies and private corporations for conservation and forest management. Table VI-1 lists the major land owners and the size of their holdings.

The U. S. Forest Service is the largest single land-owner in the county. The lands in Pisgah National Forest and Nantahala National Forest total 84,860 acres, which is about thirty-four percent (34%) of the total acreage in the county. The National Forest lands are managed for timber production, wildlife habitat, and recreation. These lands are one of the county's greatest assets as much of the land would not be suitable for development and, in fact, development might cause severe environmental degradation.

Duke Power Company holds a large tract of 13,000 acres in Hogback Township in the southwestern section of the county. This tract forms the upper reaches of the watershed for Lakes Keowee and Jocassee in upper South Carolina. This land is basically held for conservation purposes.

Champion Paper Company owns several tracts of land in the southern section of the county. These tracts are managed for timber production.

E. I. duPont deNemours has been discussed previously regarding their industrial plant. The plant is located on a site of 11,000 acres, half of which is located in Transylvania County. The other half is located in adjacent Henderson County. Only two hundred acres of the site is used for the plant and related activities, such as parking. The rest of the land is devoted to timber production and recreation for duPont employees. The large amount of open space around plant assure that the clean air and water needed will be available.

Cascade Power Company holds a tract of 1,658 acres adjacent to the duPont property in the eastern section of Transylvania County. This land contains an electric generating plant and a lake.

These major land holdings are expected to continue to be used for timber production and conservation. Intensive development is not anticipated. These lands contribute much to the natural environment of the county.

TABLE VI-I

MAJOR LAND HOLDINGS

TRANSYLVANIA COUNTY

Landowner	Size of Holding (Acres)	Location - (Township)
U. S. Forest Service Pisgah National Forest	78,956	Boyd Tp., Brevard Tp., Cathey's Creek Tp., Gloucester Tp.,
Nantahala National Forest	4,904	Hogback Tp.
Duke Power Company	13,000	Hogback Tp.,, Eastatoe Tp.,
Champion Paper Company	8,697	Dunn's Rock Tp., Little River Tp., Eastatoe Tp.,
E.I. du Pont de Nemours & Co.	5,500	Little River Tp.
Cascade Power Company	1,658	Little River Tp.

Source: Records of Transylvania County Register of Deeds

Brevard Planning Jurisdiction

The windshield survey done in July of 1975 classified each parcel of land in the jurisdiction according to the following classification system:

> Residential - land used predominantly for dwellings, including single family residences, multi-family residences, and mobile home parks.
>
> Commercial - lands used predominantly for the sale of products and services. They are often abutted by residential, agricultural, or other contrasting uses which help define them. The principal components of the commercial-use category are urban central business districts; shopping centers, usually in suburban and outlying areas; commercial strip developments along major highways and access routes to cities; and resorts. The main buildings, secondary-structures, and areas supporting the basic use are all included - office buildings, warehouses, driveways, sheds, parking lots, landscaped areas, and waste-disposal areas.
>
> Industrial - lands used for warehousing, manufacturing, and industrial parks.
>
> Transportation, Communication and Utilities - lands used for the transportation of persons and goods by motor freight, air transportation, and railroad; for communications facilities; and for utilities providing services such as water, gas, and electricity.
>
> Institutions and Governmental Facilities - lands used for education, religious, health, correctional and military facilities are the main components of this category. All buildings, grounds, and parking lots that compose the facility are included within the institutional unit, but areas not specifically related to the purpose of the institution should be placed in the appropriate category.
>
> Cultural, Entertainment, and Recreation - lands used for cultural, entertainment and recreation facilities offer leisure activities which may include activities considered to be the result of development of the best qualities of man's mental nature (cultural); activities where there are enjoyable mental occupations (entertainment); and activities which involve physical exercise (recreation).

Agriculture - lands used primarily for the production of farm commodities.

Forest - lands covered by trees capable of producing timber or other wood products and exert an influence on the climate or water regime.

Water - lands inundated by water including designated riverine floodways, but not flood fringe areas.

A copy of the detailed "Existing Land Use Classification System" may be found in Appendix A.

From this survey, the land uses in the Brevard planning jurisdiction were mapped and the amount of land in each category was calculated using a polar planimeter. Figure VI-2 shows the distribution of the various land uses in the planning jurisdiction. The amounts of land in the various uses are shown in Tables VI-2.

Within the City of Brevard, the categories containing the largest amounts of land are residential lands and vacant lands. However, within the entire planning jurisdiction, the categories of agriculture, forest, and water contain the largest amounts of land. As can be seen from Figure VI-2 and Table VI-2, much of the urban land uses are located within the City of Brevard or along the major thoroughfares leading into the city. The following section will discuss each category individually in order to present a more detailed analysis of the existing land use patterns.

Residential - Residential development has been the dominant form of land use in Brevard planning jurisdiction, occupying 822.19 acres. (See Figure VI-2). The major concentration of residential development is located within the City of Brevard. Other concentrations of residential development include the Pisgah Forest area

TABLE VI-2

LAND USE IN THE BREVARD PLANNING JURISDICTION

Category	City of Brevard Amount of Land (Acres)	City of Brevard Percentage of (%) Land Area	Planning Jurisdiction Amount of Land (Acres)	Planning Jurisdiction Percentage of Total (%) Land Area
Residential				
Single-and Two-Family	401.71	26.09	822.19	9.58
Multi-Family	23.20	1.50	23.51	.27
Mobile Home Park	.71	.05	28.37	.33
Commercial	94.20	6.12	109.66	1.28
Industrial	5.80	.38	208.85	2.43
Transportation, Communications, and Utilities	182.02	11.82	446.71	5.22
Institutions and Governmental Facilities	188.12	12.22	214.32	2.51
Cultural, Entertainment, and Recreation	17.67	1.15	286.81	3.34
Total Developed Land	913.43	59.33	2,140.42	24.96
Vacant Land	461.31	29.96	988.58	11.52
Agriculture	103.08	6.69	1,127.34	13.14
Forest	49.13	3.19	2,844.51	33.16
Water	12.74	.83	1,477.63	17.22
Total Land Area	1,539.69	100.00	8,578.48	100.00

Source: Windshield Survey, July, 1975.

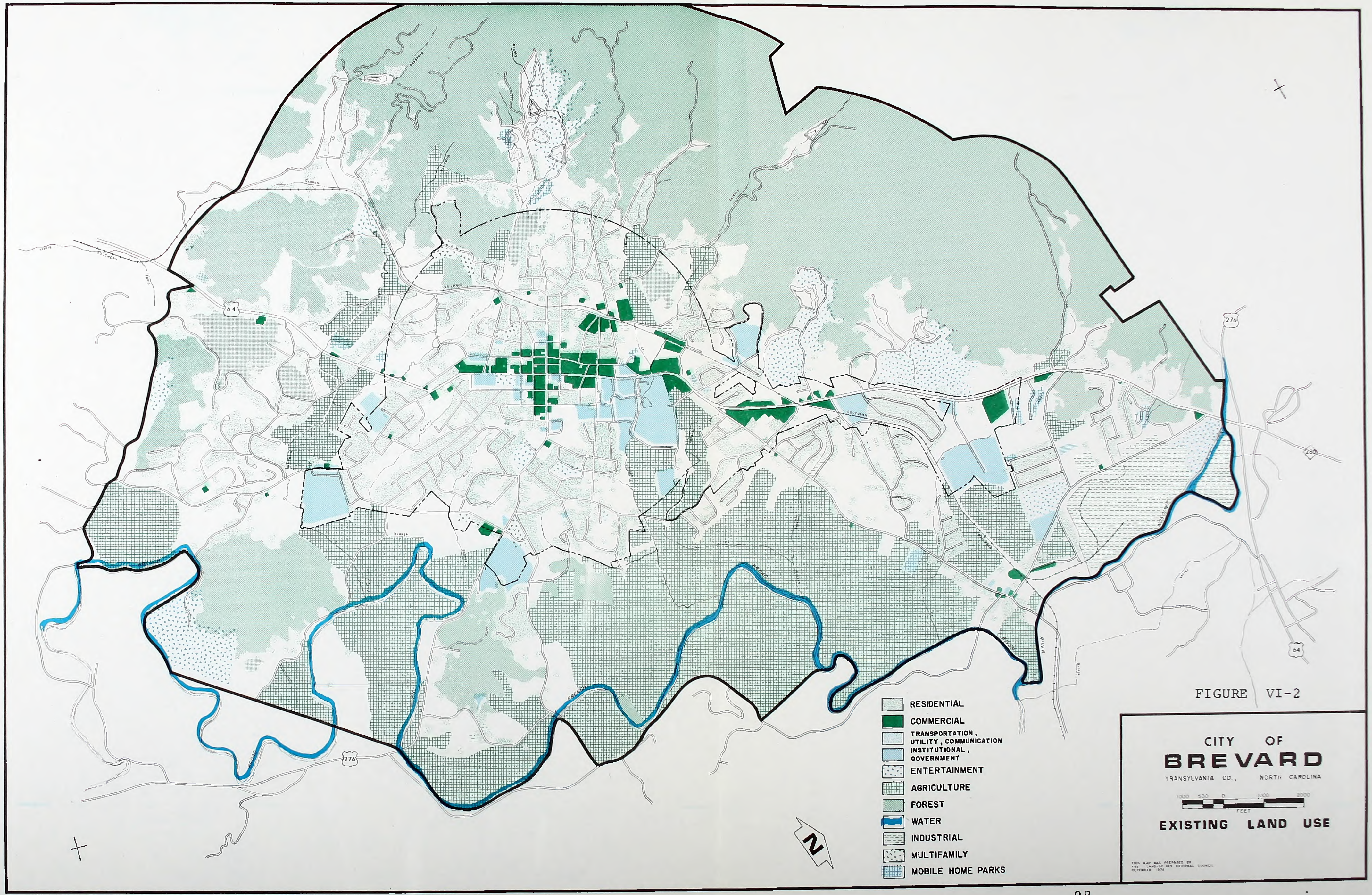


FIGURE VI-2

CITY OF
BREVARD
TRANSYLVANIA CO., NORTH CAROLINA
1000 500 0 1000 2000
FEET
EXISTING LAND USE
THIS MAP WAS PREPARED BY
THE LAND-OF-SKY REGIONAL COUNCIL
DECEMBER 197[illegible]
RESIDENTIAL
COMMERCIAL
TRANSPORTATION, UTILITY, COMMUNICATION
INSTITUTIONAL, GOVERNMENT
ENTERTAINMENT
AGRICULTURE
FOREST
WATER
INDUSTRIAL
MULTIFAMILY
MOBILE HOME PARKS
N
64
276
280

and area lying between U.S. 64 west of the City and Country Club Road. Single-family residences dominate this category with small numbers of duplexes and multi-family residential structures. A few small mobile home parks are also located in the planning jurisdiction. A significant amount of residential development continues to occur on scattered sites, especially on the fringes of the planning jurisdiction.

Poorly-planned subdivisions and mobile home parks constitute one of the most significant problems in the residential category. Most of the existing mobile home parks are poorly designed, overcrowded, and may lack adequate facilities for wastewater collection and disposal. Subdivisions have been improperly developed on steep lands using individual wells and septic tanks. Maintaining adequate roads and controlling erosion on steep slopes is one auxiliary problem related to poor subdivision development.

Another problem with established residential development is the location of homes within the floodways and flood fringes of the French Broad River, Davidson River, and major tributary creeks in the planning jurisdiction. Experts from the Tennessee Valley Authority are currently studying these streams and will delineate floodway and flood fringes for future enforcement of floodplain regulations. This study should be completed in December, 1976.

Substandard and dilapidated dwellings dominate several neighborhoods in the planning jurisdiction, including the Pisgah Forest area, the Whitmire Street neighborhood, and the Oakdale

Street - Duckworth Avenue neighborhood. These dwellings are often located on small lots, creating blighted, overcrowded conditions. The neighborhoods also have problems such as deficiencies in the water distribution system and lack of curbs and gutters for proper drainage.

Commercial - The major concentrations of the 109.66 acres occupied by commercial activity are located in the Central Business District of the City and along U.S. 64-276, U.S. 64, and N.C. 280. (See Figure VI-2). Another small commercial center is located in the Pisgah Forest Community. Several convenience gas station-grocery store establishments are located along the Rosman Highway (U.S. 64) west of Brevard. Like many cities, both large and small, Brevard has experienced a decline in the Central Business District (CBD). Over the past few years, several businesses have been relocated from the CBD to a shopping center located on U.S. 64-276. Some new enterprises have opened in the vacant businesses, but certain structures still remain empty. This may develop into a very serious problem unless new businesses are encouraged to locate in the CBD and existing businesses remain.

Related to this problem is the growing strip development along U.S. 64 and 276. The numerous businesses with individual driveways along the four-lane road cause congestion and reduce the capacity of the road to handle traffic. Strip development also encourages proliferation of signs and other forms of visual blight and uses large amounts of land in a very inefficient manner.

Industrial - The major industrial concern in the Brevard

Planning Jurisdiction is the Olin Corporation plant located in Pisgah Forest. Some smaller industries are located near the railroad tracks in Brevard, and in the community of Pisgah Forest. (See Figure VI-2).

Olin Corporation has recently completed construction of pollution abatement facilities to prevent future pollution of the Davidson and French Broad Rivers. With these facilities Olin now meets the 1977 water quality standards as set by the Environmental Protection Agency, although a localized odor problem will continue.

The lack of proper screening and buffering between industrial and residential land uses has created a serious problem in the planning area. Junkyards, in particular, continue to grow within residential neighborhoods, decreasing the neighborhood quality and generally causing a blighted situation.

Transportation, Communications and Utilities - Much of the 446.71 acres within this category lies within the rights-of-way of the streets and highways in the area. Other facilities include those of Duke Power and the Citizens Telephone Company. The problems of the transportation system have been discussed in Chapter V. (See Figure VI-2).

Institutions and Governmental Facilities - The single largest institution in the planning jurisdiction is Brevard College which is located within the City of Brevard. (See Figure VI-2). Other major institutions included in the 214.32 acres are the various churches and the local civic organizations. Major governmental facilities include the public schools, city and county government offices, and specialized facilities, such as the

Sheltered Workshop and the annex for Blue Ridge Technical Institute. The construction of several new schools in the Brevard Area left several old school buildings vacant. Most of these have been renovated and are being used for various county programs. However, some vacant buildings remain unused and this has resulted in inefficient use of centrally located property.

Cultural, Entertainment, and Recreation - Most of the 286.81 acres in this category lies outside the City of Brevard. Within the city limits lie the facilities of Silvermont Park and Franklin Park as well as several small facilities, such as the Transylvania County Library. Much of the acreage is located in summer camps which provide room and board as well as recreation for children and adolescents. The Brevard Music Center, a cultural facility attracting visitors from upper South Carolina as well as Western North Carolina, concentrates on developing musical ability in talented young people and provides exposure to professional classical musicians.

These lands and facilities need protection from conflicting land uses, such as subdivisions and commercial development, which would encroach on the scenic values of the land.

Agriculture - Much of lands lying in and near the floodplain of the French Broad River are used for the production of crops and the pasturing of cows and horses. This land is slowly being converted to more urban uses, such as residential subdivisions. This conversion of agricultural land to urban uses has been occurring on a national scale, but is beginning to pose a serious problem as the need for agricultural commodities increases.

Forestry - These lands are mainly located on the northern side of the planning jurisdiction, bordering on the National Forest. Much of 2,844.51 acres of forest lands lie on steep slopes which may be otherwise unsuitable for development. (See Figure VI-2).

Water - The French Broad River is the largest body of water in the planning area. Numerous small lakes are located in the summer camps and other recreation facilities. As was discussed in connection with residential structures, structures located in the floodways and flood fringes pose a serious hazard to areas downstream.

Vacant Land - Approximately half (461.31 acres of 988.58 acres) of the vacant land lies within the City of Brevard with the remainder being located in the fringe areas. Much of this land lies in residential subdivisions and are undeveloped lots.

Summary

This chapter has analyzed the existing land use patterns in Transylvania County. The urban-type development is centered around the City of Brevard with the most intensive residential and commercial development occurring in this area. Major industrial concerns are located in Brevard, Rosman, and near the Cedar Mountain Community. The Town of Rosman has some concentrated residential and commercial development. The remainder of the County has scattered development along the public roads and numerous clustered communities. Much of the land in the county is still forested and contains no development.

CHAPTER VII

LAND USE PLAN

This chapter presents the land use plan for guiding growth in Transylvania County. The plan contains both policies to be followed when making development decisions and maps and specific recommendations regarding future land use patterns. The policies should strive toward meeting the planning and development goals set forth in Chapter I. To achieve the most desirable patterns of land use, the many factors discussed in the previous chapters must be analyzed in conjunction with projections for future land requirements. Population and employment projections are instrumental in determining future land use requirements. Environmental suitability, transportation facilities, water and wastewater treatment facilities and existing land use patterns determine the most suitable area to contain future growth.

The future land use patterns will be presented for Transylvania County and the Brevard Planning Jurisdiction. The long-range planning period of twenty years will be supplemented by maps and recommendations for an interim period of ten years. The maps for Transylvania County will be rather general in nature to allow flexibility in the rural areas of the county. The maps for the Brevard planning jurisdiction will be more detailed due to the density of development in the area.

Development Policies

To attain the planning and development goals, more specific policies in the general categories of growth management, environmental quality, economic development, and social quality should be developed. These policies would provide the general framework within which development decisions can be made. These development policies form an integral part of the Land Use Plan and should always be considered in conjunction with the maps and specific recommendations.

Growth Management - Policies pertaining to issues of growth management may be divided into those dealing with urban issues and those dealing with rural issues. The urban policy statements set forth below are applicable to development in the Brevard Planning Jurisdiction and may also be applicable to lands in the county which are developed at urban densities.

1) Efficient use of urban land should be encouraged. A compact urban form provides for efficient utilization of public services, such as water and sewer services and transportation facilities.

2) Land use patterns should provide for separation of incompatible land uses, such as residential and industrial uses. Failure to separate these uses causes a border area where uses fluctuate and numerous structures stand vacant.

3) Stable residential neighborhoods should be preserved and premature conversion to more intensive uses discouraged.

4) Standards for future development of residential, commercial, and industrial land should be established.

   Residential sites should provide good access to major thoroughfares; however, these streets should not penetrate neighborhoods. Such sites should be generally well-drained and should not have average slopes greater than 25 percent. Siting of houses should consider existing trees and unusual foliage and should minimize removal.

Commercial sites should be located appropriately for their function. A neighborhood commercial center, providing convenience goods to an immediate neighborhood, should be conveniently accessible and within easy driving range of all households in the neighborhood. Community-serving commercial centers should be restricted to intersections of arterials as of an arterial and a collector street. All commercial sites should be of adequate size to provide space for shops, off-street parking, loading and pedestrian areas.

Industrial sites should have direct access to one or more major transportation systems, but should not generate heavy traffic on residential streets. These sites should be level and well-drained.

Policies regarding development in rural areas of the county are set forth below:

5) Development in rural areas should be limited to a density that does not exceed the capacity of the land. This density should be appropriate for use of individual wells and septic tanks.

6) Development should not interfere with the efficient movement of persons and goods along major thoroughfares. Residences should not front directly on arterial roads. Commercial areas should be located at intersections or clustered together using common ingress-egress points.

7) Lands with naturally fertile soils should be preserved for agricultural use. Premature scattered developments that would conflict with agricultural pursuits should be discouraged. Land conservation, water and wastewater land reclamation, and other physical development projects which would increase, enhance, and protect agricultural lands and their production capabilities should be encouraged.

Environmental Quality - Transylvania County currently has a healthy natural environment which is one of the County's major assets. Policies pertaining to issues of environmental quality are set forth below.

1) Areas of environmental concern are often fragile and susceptible to damage and should be preserved. Where these areas occur outside of protected conservation areas, development should be designed so as to protect these areas.

2) Development of hazard areas, such as floodplains, should be discouraged. Development within these areas may cause further damage downstream.

3) Retention of natural land contours and natural ground cover should be encouraged whenever development occurs on slopes. Some alteration of natural contours may be necessary to allow development of roads and structures, but this should be minimized.

4) Development should not adversely affect stream quality. On the higher slopes, trees and vegetative cover should be retained near streambeds to protect trout habitat. Excessive erosion which leads to sedimentation of streams must be controlled. Development utilizing septic tanks for sewage disposal should be located so that no effluent contaminates the streams.

Economic Development - Policies regarding economic development, including industrial and commercial growth, are set forth below. In the past, economic development has been a goal in itself, no matter what the cost. While economic growth is beneficial to an area, the costs of such growth must also be considered.

1) The Brevard Central Business District should be revitalized so that it can again be the focus of commercial activity in Transylvania County. Numerous factors, such as inadequate parking and property taxes, must be considered regarding such a revitalization effort and impetus for this must come from groups such as the Chamber of Commerce and the Downtown Merchant's Association as well as from local government and concerned citizens.

2) Industrial growth in Transylvania County should be screened carefully and the benefits of new industry evaluated in light of costs to local government and possible environmental damage. While the increased taxes generated by major industrial development may be beneficial to the County, a large influx of workers could require local government expenditures to provide necessary services.

Quality of Life - The quality of life in a community is an intangible characteristic encompassing a broad range of attitudes and human services as well as the physical surroundings. Policies designed to improve the quality of life in Transylvania County are set forth below:

1) A variety of physical facilities and service programs should be available to citizens of the County. These facilities and services include those needed for recreation, cultural activities, health services and education.

2) The opportunity to utilize all facilities and services provided should be available to all citizens of the County. Barriers due to location of facilities should be minimized as well as those related to age, race and sex.

Transylvania County Land Use Plan

The following recommendations apply the development policies to future land use patterns in Transylvania County. To facilitate discussion of future land use patterns, a system of land classification has been developed.

Developed:	Land currently developed for urban purposes and provided with usual municipal services including at least public water, sewer, and recreational facilities and police and fire protection.
Transition:	Lands currently developed for urban services, and such additional lands as are necessary to accommodate the urban population and economic growth anticipated within the county at an average density of 2000 persons per square mile over a ten-year period. These additional lands should be served by public water, sewer, and other urban services including public streets, and should be generally free of severe physical limitations for urban development.
Community:	Areas within the county characterized by a mixture of urban land uses, including at least residential and commercial, and that have historically been a focus of clustered rural settlement; or areas identified by the county as necessary to help meet housing needs and limited commercial development over the planning period, and are suitable and appropriate for clustered rural development at density appropriate for public water service but not requiring public sewer service.

Mixed Rural:	Lands currently committed to rural settlement and other lands that might be developed to help meet future needs at rural settlement densities without requiring public water or sewer service. These lands meet future needs for housing at low density, for public facilities necessary to provide essential services to Developed or Transition lands, or to an extensive rural population, and for limited commercial development to serve the traveling public and rural populations.
Key Industrial Sites:	Lands currently committed to major industrial development, but located outside of Developed or Transition lands. These locations should be adequate in size for future industrial growth and should be economically feasible to develop without serious damage to the environment.
Rural Resource:	Lands identified as appropriate locations for natural resource management and allied uses, lands with high potential as commercial agriculture, forestry or mineral extraction; lands with one or more limitations that would make development costly and hazardous; and lands containing irreplaceable, limited, or significant natural, recreational, or scenic resources.
Conservation:	Lands that are unique, fragile, or hazardous for development, necessary wildlife habitats, publicly owned watersheds, large undeveloped tracts of forest with limited access, land with one or more characteristics which would make development unwise, lands providing significant recharge to ground water, and lands which contain significant natural,scenic, or recreational resources.

The 1985 Land Use Plan depicts the most desirable pattern for growth in the County over a ten-year period. (See Figure VII-1) These recommendations for this ten-year period will be discussed for each individual category. The 1995 Land Use Plan is presented in Figure VII-2 as a guide for growth over the twenty-year planning period. Growth trends and recommendations for the 1995 plan will be highlighted. The illustrations are general in nature and represent concepts of appropriate land-use patterns. The stated policies should be used in conjunction with illustrations to attain the desired goals.

The 1985 Plan

Developed - In Transylvania County the lands currently developed with urban services, such as public water and sewer, are those lying within the corporate limits of the City of Brevard. These lands have been classified as Developed for the ten-year planning period.

Transition - Lands which will be provided with urban service during the ten-year planning period have been classified as Transition. Public sewer service will be the constraining factor within the Brevard urban fringe. By 1985, the Nicholson Creek drainage area will be served by public service as will the Pisgah Forest community. These areas have therefore been classified Transition. The Transition areas will exclude the floodplains to the east of Brevard and the steep slopes to the west.

Community - The Town of Rosman is the only defined community in Transylvania County. The new water system will provide adequate water for the community over the planning period, but sewer service for the entire community is not expected. The floodplain of the French Broad River will be a major constraint to development as will the steep slopes and National Forest holdings north of U.S. 64.

Mixed Rural - Lands in this category include most of the rural residential development in the County. Lands on the edge of the Brevard urban fringe and in the small rural communities of the County, such as Cedar Mountain, Balsam Grove and Quebec, may contain a mixture of land uses, while other areas classified as Mixed Rural, such as the Connestee Falls and Lake Toxaway subdivisions, are dominantly residential.

Key Industrial Sites - Lands in Transylvania County which are classified as Key Industrial Sites include lands on which major industries, such as Olin Corporation, DuPont, American Thread, M-B Industries, and the NASA Tracking Station are located. No further lands have been so classified due to the lack of suitable land and urban services outside the Brevard urban area.

Rural Resource - Lands classified as Rural Resource cover much of the County. Large public and private land holdings, such as those owned by the U. S. Forest Service and Champion Paper Company, have been specifically identified in Figure VII-1. These lands are actively managed for timber production. Other Rural Resource lands include crop and pasture lands generally located in the valleys of the French Broad and Little Rivers and forest lands on the mountains which are presently held by individuals.

Conservation - Major conservation areas include Duke Power's property and the Whitewater Falls Scenic Area in the southwestern corner of the county, Dismal Falls Scenic Area in the northeast, and the Cradle of Forestry, Looking Glass Falls Scenic Area, and the Fish Hatchery in the northeast corner of the county. The Brevard and Hendersonville watersheds, which are leased from the U. S. Forest Service, have been classified as Conservation for the ten-year planning period.

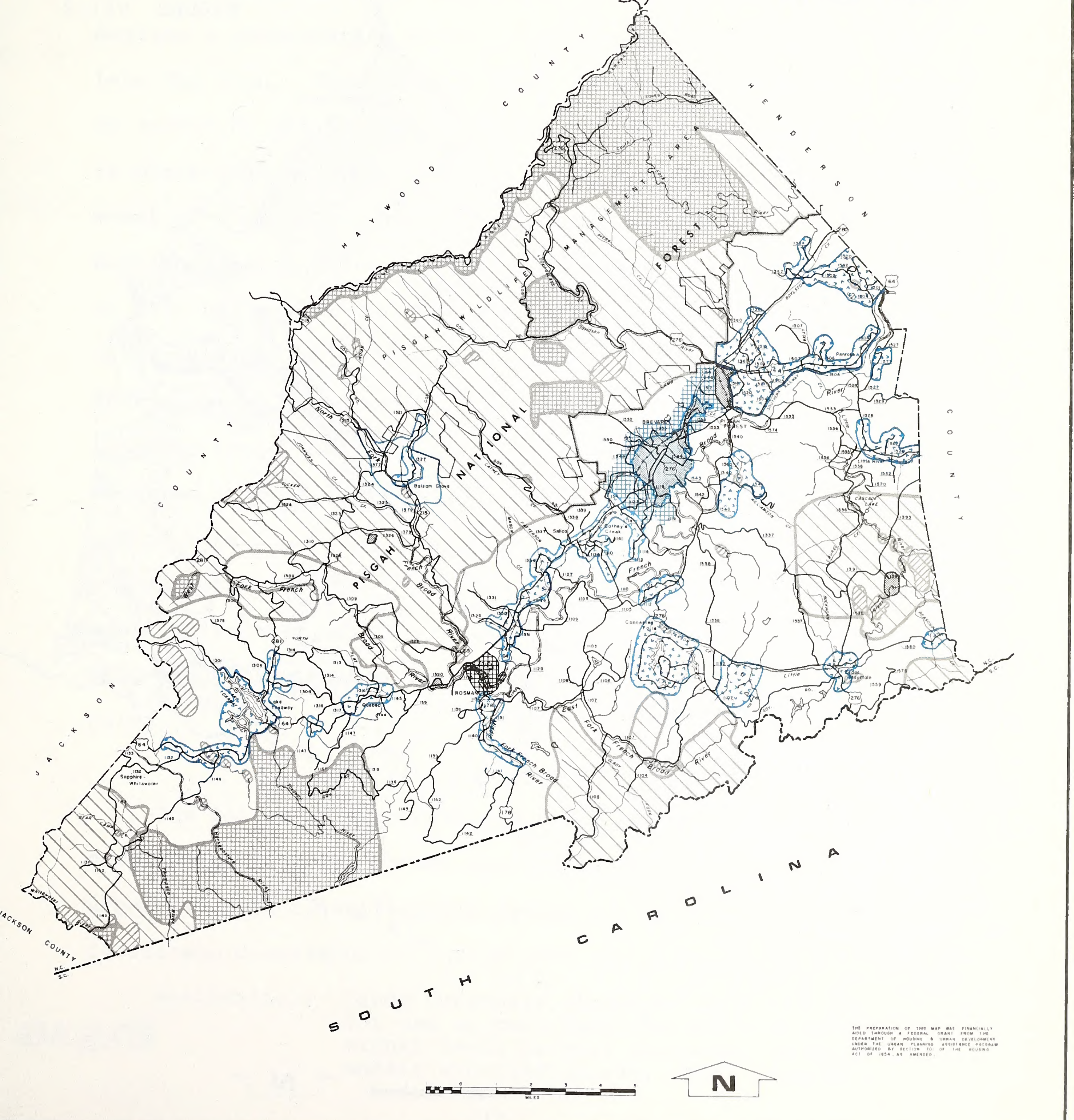
Other areas of environmental concern have been designated on the maps as special conservation areas. These contain im-

REGION B - NORTH CAROLINA
TRANSYLVANIA CO.
LAND USE PLAN - 1985

▨	DEVELOPED	☐	RURAL RESOURCE
▦	TRANSITION	▧	RURAL RESOURCE LARGE public/private HOLDING
▦	COMMUNITY	▦	CONSERVATION
▨	MIXED RURAL	▨	AREAS OF ENVIRONMENTAL CONCERN (not in conservation)
▨	KEY INDUSTRIAL SITES		

LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED AUGUST 1978

FIGURE VII-1



THE PREPARATION OF THIS MAP WAS FINANCIALLY AIDED THROUGH A FEDERAL GRANT FROM THE DEPARTMENT OF HOUSING & URBAN DEVELOPMENT UNDER THE URBAN PLANNING ASSISTANCE PROGRAM AUTHORIZED BY SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

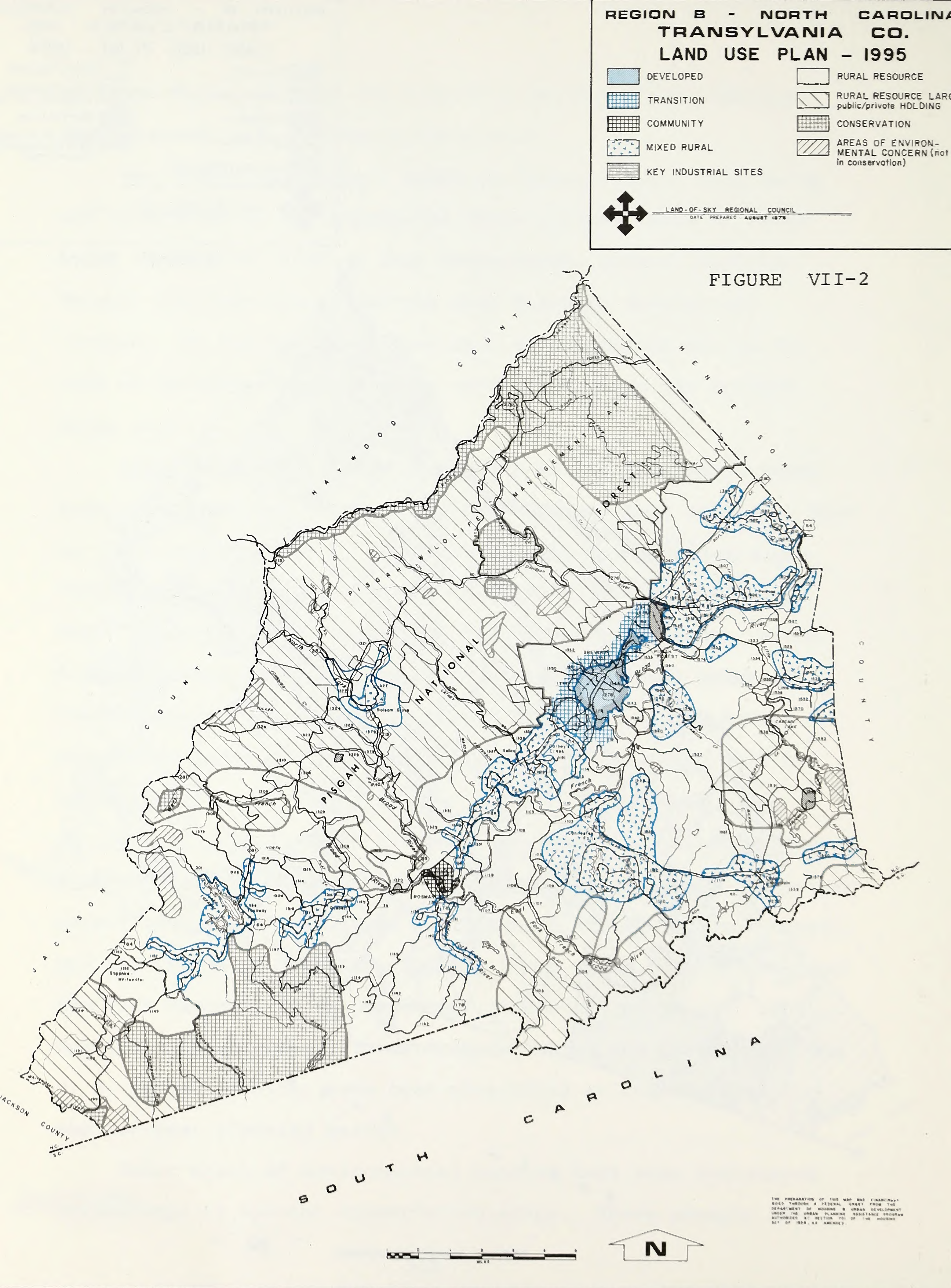

REGION B - NORTH CAROLINA
TRANSYLVANIA CO.
LAND USE PLAN - 1995
DEVELOPED
TRANSITION
COMMUNITY
MIXED RURAL
KEY INDUSTRIAL SITES
RURAL RESOURCE
RURAL RESOURCE LARG
public/private HOLDING
CONSERVATION
AREAS OF ENVIRONMENTAL CONCERN (not in conservation)
LAND-OF-SKY REGIONAL COUNCIL
DATE PREPARED · AUGUST 1976
HAYWOOD COUNTY
HENDERSON COUNTY
JACKSON COUNTY
SOUTH CAROLINA
PISGAH WILDLIFE MANAGEMENT AREA
FOREST
PISGAH NATIONAL
PISGAH
BREVARD
PISGAH FOREST
ROSMAN
French Broad River
Davidson River
North Fork
East Fork
Little River
NC
SC
MILES
N

FIGURE VII-2

portant scenic and geologic resources which should be preserved, although the area involved is not large enough to warrant Conservation classification.

The 1995 Plan

The 1995 Land Use Plan, shown in Figure VII-2, generally depicts a continuation of the growth trends shown in the 1985 Land Use Plan. The basin of Glady Branch west of Brevard should be served by public sewer service and, therefore, this area is classified as Transition in 1995. Extension of the Mixed Rural areas will occur in many areas, most dramatically in Dunn's Rock Township. The density of growth expected in this township by 1995 may require provision of some public services, such as water service. Age characteristics of the population would determine the necessity for schools in the area.

Two areas have been removed from the Conservation classification. The Brevard and Hendersonville watersheds are currently leased from the U. S. Forest Service and are protected from human encroachment. Future plans for these areas include forest management and recreational use as soon as the Cities of Brevard and Hendersonville provide complete treatment for their water supplies.

Brevard Land Use Plan

The following recommendations are designed to relate the development policies to the spatial patterns of land use. An urban land use classification system has been developed to facilitate discussion of future land use patterns.

Residential: Lands currently committed to dwellings for one or more families and such additional lands as will be needed to accommodate expected growth. This classifi-

	cation includes single- and multi-family residences, mobile homes, and group dwellings which are not part of an institution.
Low-Medium Residential:	Lands containing mostly one and two family dwellings at an average density of not more than three dwelling units per acre. Much of this land may not be served by public water and sewer and lot sizes should be adequate for an individual water supply and on-site sewage disposal.
Medium-High Residential:	Lands containing one and two family dwellings at an average density of three to six dwelling units per acre as well as high density complexes such as multi-family residences and mobile home parks. These lands must be served by public water and sewer systems.
Commercial:	Lands currently committed to the sale of products and services to the consumer and such additional land as may be needed to accommodate expanded commercial activities.
General Commercial:	Lands housing a broad range of goods and services to serve residents of an entire community and possibly outlying areas of the county. These lands include the Central Business District of the community as well as other areas of general activity.
Neighborhood Commercial:	Lands housing convenience goods for the residents of the neighborhood in which the activity is located.
Industrial:	Lands currently committed to the manufacture of products and lands suitable for future industrial development.
Public/Semi-Public:	Lands controlled or owned by public bodies and lands which are devoted to mental, physical, spiritual and cultural development by nonprofit organizations.
Floodplains:	Lands which would be inundated by the 100 year flood as defined by the Tennessee

Valley Authority.

Floodway: Lands which would contain a 100 year flood without increasing the height of the flood more than one foot.

Flood Fringe: Lands lying outside the Floodway, but within the 100 year floodplain.

Agriculture: Lands reserved for the production of farm commodities. These lands lie within the Brevard Planning Jurisdiction and therefore are distinguished from Rural Resources.

Forest Lands: Lands covered by trees capable of producing timber or other wood products and exerting an influence on the climate or water regime. These lands lie within the Brevard Planning Jurisdiction and therefore are distinguished from Rural Resources.

Prior to development of the Land Use Plan, it is necessary to determine the acreage needed to accommodate future growth in the various land use categories. The present density of development, based on population (persons per acre) for residential land uses and on employment (employees per acre) for commercial, industrial and public/semipublic uses is determined first. Then these densities are modified by considering factors such as public water and wastewater treatment systems, land values and taxation, and accessibility, to estimate density in the future. These densities are then applied to the projections of population and employment to obtain future land requirements. Table VII-I shows the future land requirements for the Brevard Planning Jurisdiction.

The Brevard Land Use Plan consists of the 1985 Land Use Plan depicting land use patterns in the ten-year planning period and the 1995 Land Use Plan for the twenty-year planning period. The 1985 Land Use Plan is shown on Figure VII-3 and will be discussed in detail regarding the various land use categories.

TABLE VII - I

FUTURE LAND USE REQUIREMENTS

BREVARD PLANNING JURISDICTION

Category	1975 Acreage	1985 Acreage	1995 Acreage	Change (1975-1995) (acres)
Residential (and vacant)	1,862.65	2,073.2	2,264.53	401.88
Commercial	154.33	212.74	248.70	94.37
Industrial	208.85	274.42	307.08	98.23
Public/Semipublic	501.13	537.64	566.70	65.57

*The population and employment in the Brevard Planning Jurisdiction is assumed to be 95% of that for Brevard Township.

Source: Land-of-Sky Regional Council

Figure VII-4 depicts the 1995 Land Use Plan for the Brevard Planning Jurisdiction. The changes between 1985 and 1995 will then be highlighted.

The 1985 Plan

Residential - The medium to high-density residential uses will be concentrated within the City limits of Brevard, due to availability of water and sewer service. As these services become available in a wider area, some multi-family complexes may be expected outside the City limits, such as in the Pisgah Forest community. Low-to medium-density residential development will occur in suitable areas which may not have urban services at the time of development, such as the area west of Brevard.

Commercial - Commercial activity should be concentrated in the Central Business District (CBD) with improvements made within the CBD to facilitate parking and pedestrian travel. Strip development should be discouraged along U.S. 64 on both sides of Brevard. Such strip development draws business away from the CBD and causes traffic congestion problems. Neighborhood commercial centers should serve the residential neighborhoods in Pisgah Forest, the neighborhood in the western section of Brevard and the neighborhood off the Rosman highway.

Industrial - The Olin Corporation in Pisgah Forest will continue to be the major industrial complex within the planning jurisdiction. Some additional small industrial uses should develop in the Pisgah Forest area and in an area near the railroad tracks in the northwest section of Brevard.

Public/Semipublic - Little additional public/semipublic land is anticipated due to the large amounts of land currently in such uses. Development of further community facilities should not consume large amounts of additional lands during the ten-year planning period.

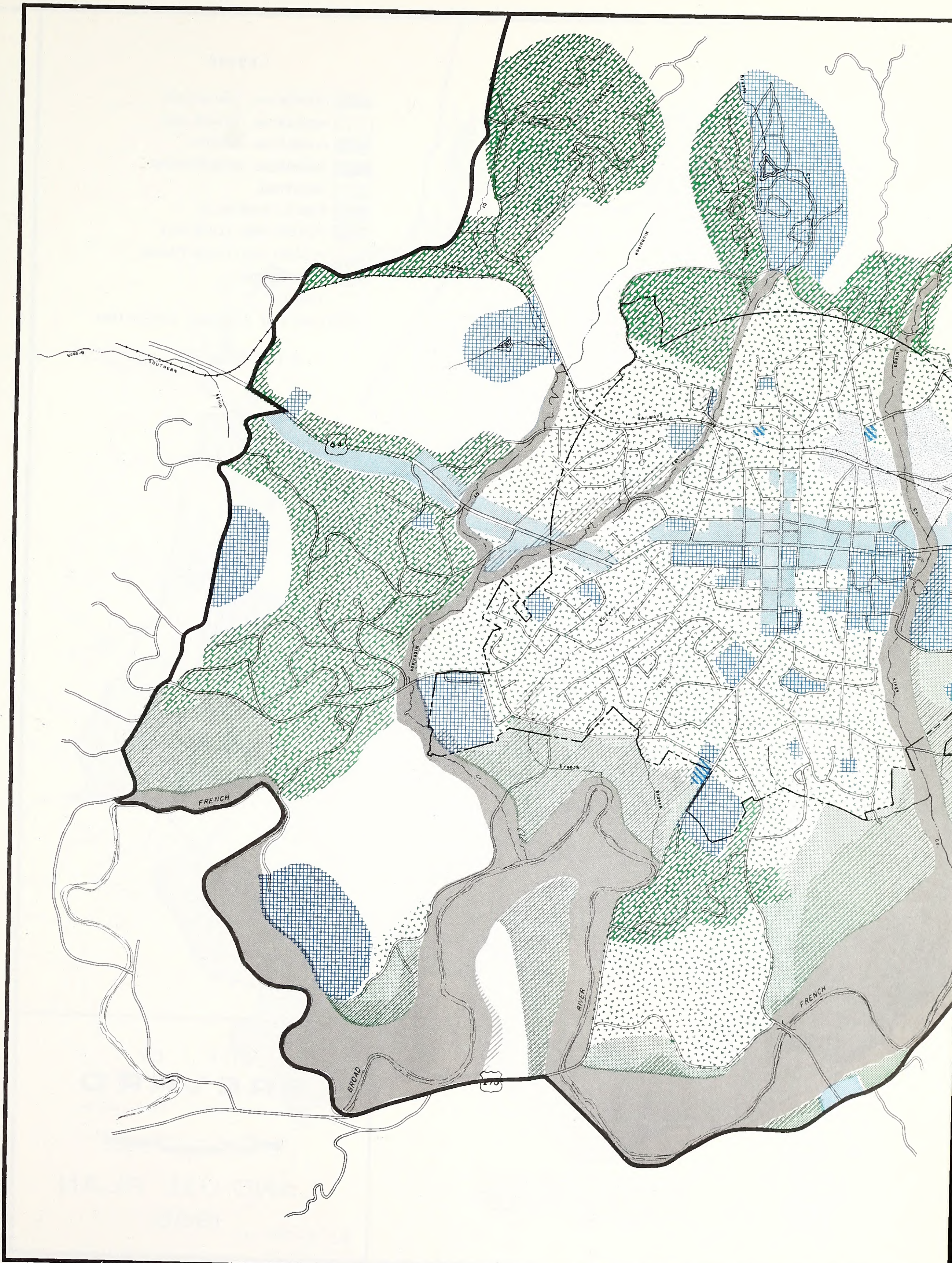
Floodplains - Most of the land classified as floodplain lies along the French Broad River with some land lying near tributary creeks. The floodways are designated and only open space uses should be allowed. Flood fringe areas should generally remain in agriculture uses over the ten-year planning period.

Agriculture - As noted above, agriculture frequently overlaps with designated flood fringe areas. These will generally be the only areas remaining agriculture during the planning period.

Forest - Forest lands are generally located on the steeper slopes north of Brevard. The very steep slopes should be protected and remain in forest.

The 1995 Plan

The 1995 Land Use Plan, shown in Figure VII-4 generally continues growth trends along existing patterns. Additional lands will be converted from agriculture and forest lands to residential use. Additional industrial land should be located in the northwest section of Brevard. Steep slopes should continue to be protected from development.


Branch
SOUTHERN
Mill
RAILWAY
64
Nicholson
Kings
Cr.
Broad
Branch
Branch
Cr.
Kings
FRENCH
BROAD
RIVER
FRENCH
276
Cr.

is anticipated due to the large amounts of land currently in such uses. Development of further community facilities should not consume large amounts of additional lands during the ten-year planning period.

Floodplains - Most of the land classified as floodplain lies along the French Broad River with some land lying near tributary creeks. The floodways are designated and only open space uses should be allowed. Flood fringe areas should generally remain in agriculture uses over the ten-year planning period.

Agriculture - As noted above, agriculture frequently overlaps with designated flood fringe areas. These will generally be the only areas remaining agriculture during the planning period.

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The 1995 Plan

The 1995 Land Use Plan, shown in Figure VII-4 generally continues growth trends along existing patterns. Additional lands will be converted from agriculture and forest lands to residential use. Additional industrial land should be located in the northwest section of Brevard. Steep slopes should continue to be protected from development.

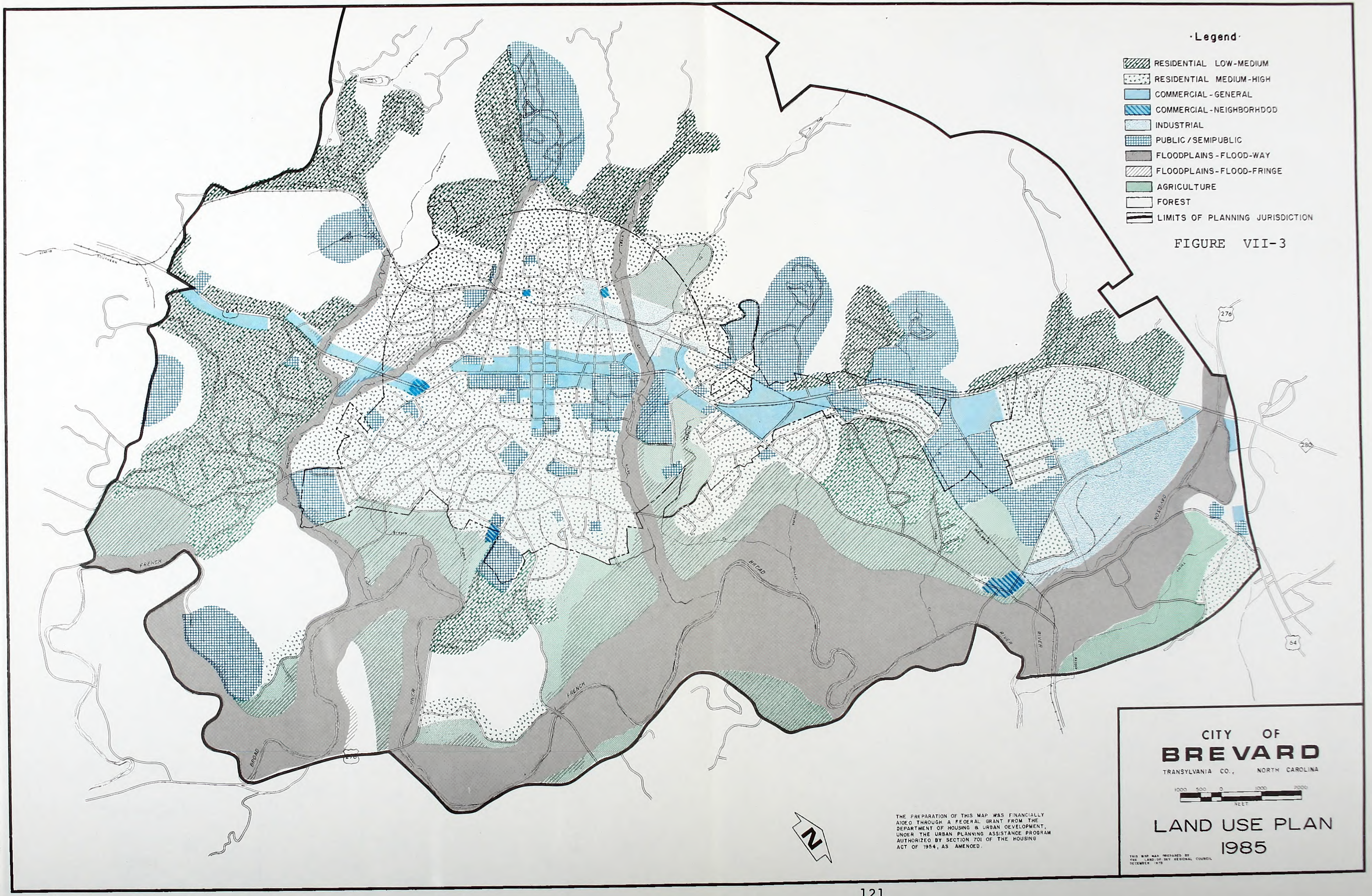

FIGURE VII-3

CITY OF
BREVARD
TRANSYLVANIA CO., NORTH CAROLINA

LAND USE PLAN
1985

THIS MAP WAS PREPARED BY
THE LAND-OF-SKY REGIONAL COUNCIL
DECEMBER [illegible]

THE PREPARATION OF THIS MAP WAS FINANCIALLY AIDED THROUGH A FEDERAL GRANT FROM THE DEPARTMENT OF HOUSING & URBAN DEVELOPMENT, UNDER THE URBAN PLANNING ASSISTANCE PROGRAM AUTHORIZED BY SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

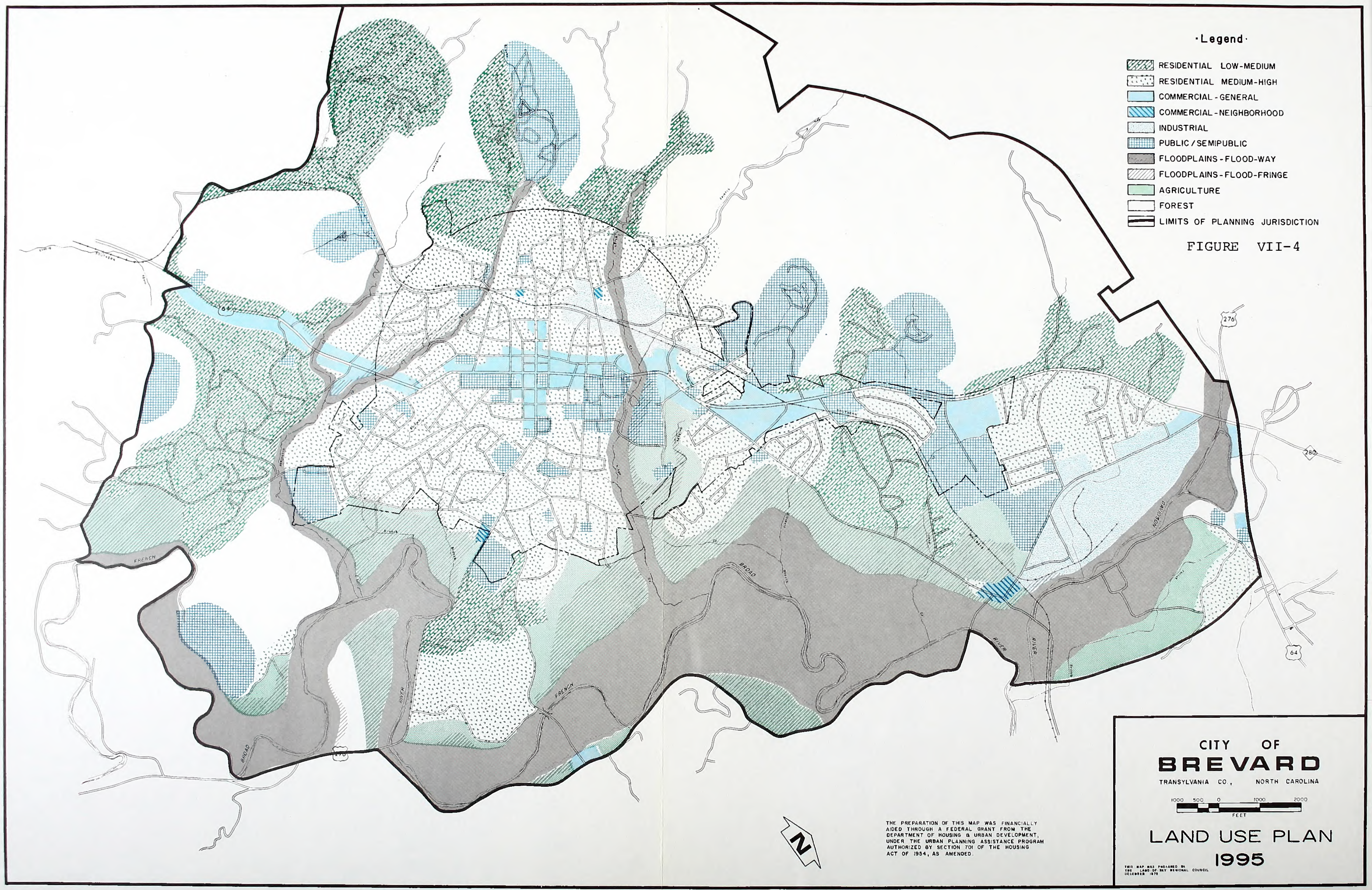

FIGURE VII-4

CITY OF
BREVARD
TRANSYLVANIA CO., NORTH CAROLINA

LAND USE PLAN
1995

THIS MAP WAS PREPARED BY
THE LAND-OF-SKY REGIONAL COUNCIL
DECEMBER 1975

THE PREPARATION OF THIS MAP WAS FINANCIALLY AIDED THROUGH A FEDERAL GRANT FROM THE DEPARTMENT OF HOUSING & URBAN DEVELOPMENT, UNDER THE URBAN PLANNING ASSISTANCE PROGRAM AUTHORIZED BY SECTION 701 OF THE HOUSING ACT OF 1954, AS AMENDED.

CHAPTER VIII

IMPLEMENTATION OF THE LAND USE PLAN

The effectiveness of a land use plan is measured by how it is implemented in the community. This final chapter presents the policy and regulatory measures which can be utilized by the City of Brevard and Transylvania County to implement the provisions of the City/County Land Use Plan, followed by specific recommendations regarding the use of these tools.

Tools for Implementation

Various tools are available to cities and counties in North Carolina for the implementation of local land use plans. Some of these tools fall into the general category of public policy, such as adoption of the plan, a Public Investments Strategy, utility extension policies and taxing policies. Others are regulatory measures, governed by specific enabling legislation in the General Statutes. These regulatory measures include subdivision regulations, zoning, enforcement of building and housing codes and control of soil erosion.

Policy Measures

Adoption of the Plan - The Land Use Plan must be formally adopted by the City of Brevard Board of Aldermen and the Transylvania County Board of Commissioners in order for it to become a basis for subsequent land use regulations such as zoning. The Land Use Plan then stands as an official policy statement to guide future development decisions regarding matters such as the provision of public services and location of community facilities.

Public Investments Strategy - Units of local government carry out a variety of capital improvement projects each involving large investments of public funds. These projects provide the infrastructure of physical facilities and services such as streets, water and sewer lines, and schools, which direct and stimulate development. All too often, such projects are prioritized in response to neighborhood pressure or to requirements of state and federal grant programs. A Public Investment Strategy is an analysis of projects to be funded and a method for prioritizing those projects in conformance with the Land Use Plan.

A Public Improvement Strategy affords an opportunity to coordinate projects as to timing, location and financing. It schedules phases of projects over time so that the various steps are accomplished in a logical and economic manner. Future needs and development activities as shown in the Land Use Plan can be coordinated.

The development of such a Public Investment Strategy involves numerous steps. Potential projects are inventoried, including cost estimates and an initial evaluation of their priority, then analyzed. The financial capabilities of local government units are investigated and a schedule of project execution developed considering project relationships to each other and to overall financial capabilities. From this schedule, projects are selected for early completion and a capital budget developed for the coming year. The final step involves adoption of the capital budget as part of the annual budget.

The development of the Public Improvements Strategy should involve a commitment to those improvements recommended in the Land Use Plan and those which would encourage development in conformance with the Land Use Plan. All commitments of public funds should be considered in reference to the Land Use Plan.

Utility Extension Policies - A Utility Extension Policy is a written policy statement regarding the extension of public utilities, such as water and sewer to previously unserved areas. Such a policy should define the roles of the municipality and of the developer regarding financial responsibility for construction of physical facilities, such as water lines. The extension of these public services, increases the desirability of land for development. Provision of services enables a developer to increase the density of development on the property and thereby increase his profit. Such extensions should be closely coordinated with the Land Use Plan to encourage development in conformance with the plan and to prevent costly extensions of utilities through unimproved areas to serve a particular private development and other forms of urban sprawl. Another aspect of utility extension policy deals with provision of services as an incentive for development which may offer economic benefits in terms of employment and an increased tax base, and as an incentive for annexation to bring such benefit to the city. However, these benefits should be considered in terms of conformance with the Land Use Plan before any commitments are made.

Taxing Policies - The real property tax has been criticized as being a contributing factor in causing a range of land use-related problems. The property tax can, however, be utilized to implement the Land Use Plan and achieve more desirable land use patterns. According to existing statutes, property assessments are to be based upon the "true market value" of the land. This "true market value" will vary according to the use of the land. Prime agricultural land and forestlands near urban areas may be assessed as agricultural land or as urban land which will be developed. Assessment as urban land may result in higher taxes which make continued use of the land for farming impractical. Assessment done in conformance with the Land Use Plan would encourage designated lands to remain agricultural and forestlands while encouraging suitable lands to be converted to urban uses.

Community Acceptance and Cooperation - Citizen participation is undoubtedly one of the most important factors determining the success of the Land Use Plan. When the citizens have been informed about and involved in the planning process, they may accept the goals and recommendations of the Land Use Plan and be willing to work towards them.

The local planning boards should be representative of the population and reflect a broad spectrum of interests. A joint planning board for both a city and county can often promote coordination between city and county planning efforts and provide for greater consistency in plans for future growth.

Successful citizen participation can be achieved through a public education program regarding the planning process in general and the Land Use Plan in particular. Such a program should include newspaper articles and radio programs to provide a general background to the largest possible number of persons. Meetings between the professional staff, the planning board and local civic organizations and community clubs should be encouraged as a mechanism for public education and citizen input. A Public Hearing on the Land Use Plan should be held to obtain additional citizen input prior to formal adoption of the Plan.

Regulatory Measures

Subdivision Regulations - The control of land subdivision is a regulatory measure by which private land development can be brought into conformance with the Land Use Plan and public interest. These regulations establish minimum standards of design and construction for all new land development, including both public and private improvements. They provide the guide by which a local board equitably reviews all proposed subdivision plats. Subdivision regulations also provide the land developer with the prerequisites of land subdivision necessary for approval by the local board.

These controls are necessary for orderly, economical development. Through enforcement of such regulations, the design and quality of subdivisions can be improved, resulting in better living conditions and greater stability of property values for the individual property owner. Such controls over land subdivision will ensure the installation of utilities that may be economically serviced and maintained, a coordinated street system, and sufficient open space for recreation and other public services.

Zoning - Zoning is another of the legal devices used to implement the Land Use Plan. It is not a complete regulatory device in itself, but should be used in conjunction with other control measures. Zoning divides a city or county into districts corresponding to the intended use of the land as recommended by the Land Use Plan. It specifically defines the purpose of each district and explicitly prohibits future or intended uses within the district that do not conform with its purpose. To accomplish this, zoning restricts the location, height, bulk, and sizes of buildings and structures. Further restrictions include the density of population and the use of buildings, structures and spaces. It is essential that a zoning ordinance be enforced as written on a consistent basis. An inconsistent enforcement program or the indiscriminate granting of variances or "favors" may be of such harm that an area would be just as well off without the zoning ordinance.

Standards for the development of mobile home parks may be included in a zoning ordinance or written as a separate ordinance. The density of development in mobile home parks has frequently caused land use problems, such as overcrowding and refuse disposal. Minimum sizes for mobile home spaces, provisions for parking and access roads, and provision of open space and recreation are among standards established for mobile home parks.

Regulation of development in areas prone to flooding may be accomplished through the general zoning ordinance or a specific floodway zoning ordinance. These regulations designate areas within which no buildings can be constructed and areas within which construction may occur if certain stringent guidelines are followed.

Soil Erosion and Sedimentation Control Ordinance - Excessive soil erosion wastes valuable topsoil and pollutes surface water. This loss of a valuable natural resource may scar the land and destroy wildlife habitat and agricultural productivity. Sedimentation of surface waters may worsen flooding by raising the floor of the water body or by obstructing the normal stream flow. A soil erosion and sedimentation control ordinance provides a legal mechanism for controlling the removal of ground cover so that excessive erosion does not occur. Units of local government in North Carolina have the option of adopting a local regulatory ordinance and providing for local enforcement or allowing the State to enforce the General Statutes governing soil erosion and sedimentation. In either case, the ordinance provides for an erosion control plan to be filed prior to removal of ground cover on more than one acre of land and provides penalties for persons causing excessive erosion or sedimentation of surface waters.

Environmental Policy Ordinance - In North Carolina, local governments are authorized to adopt an environmental policy ordinance for their area of jurisdiction. This ordinance requires that an Environmental Policy Statement be submitted by a builder to the local planning agency prior to issuance of a building permit for any major development, such as subdivisions, industries, commercial operations, and multi-family complexes. This Statement should assess the effects of the proposed development on the environment, including potential for erosion, destruction of rare plant and animal habitats, and degradation of water bodies as well as socioeconomic effects. This Statement alerts government agencies to possible environmental damage and enables the agencies to monitor these activities more closely.

Code Enforcement Program - In communities where honest attempts are being made to upgrade the quality of structures and general living conditions, a good code enforcement program is essential.

Codes are governmental requirements placed on private structures to protect the occupants from the hazards of living and working in unsound, unhealthy, or otherwise dangerous structures. Building and other construction codes, such as plumbing and electrical codes; establish standards for materials and methods for new construction. Housing codes establish minimum standards for existing dwelling units.

The purpose of the construction and housing codes is to protect people from the hazards of unsound buildings. In contrast to the zoning ordinance, which divides the county or community into districts with different regulations for each, these codes are uniform in character and are applied to the community as a whole. While the codes are not directly derived from the Land Use Plan as are zoning and subdivision regulations, they are created to serve the people in the same way as the Land Use Plan. Codes help eliminate blighted structures and maintain the quality of residential and commercial areas. Declines in the quality of these areas often result in pressures for conversion to other uses, such as from residential to commercial. These conversions are frequently in conflict with the adopted Land Use Plan and may encourage urban sprawl.

Recommendations for Implementation

The following recommendations are designed to implement the Land Use Plan utilizing the most appropriate of the various legal tools to alleviate problems which have previously been identified. The recommendations for Transylvania County will be presented first, followed by specific recommendations for the Brevard Planning Jurisdiction.

Transylvania County - The County Commissioners should review the following policies and regulatory devices for implementing the County Land Use Plan.

Policy Measures

1) The Transylvania County Commissioners should formally adopt the Land Use Plan as the official County growth policy. Decisions such as location of community facilities may affect future development and should be made in accordance with the Land Use Plan.

2) The Commissioners should undertake development of a Public Investment Strategy to identify needed capital improvement projects and to schedule these projects in accordance with the County's financial capabilities and the Land Use Plan.

3) The Commissioners should establish an administrative policy regarding the initiation and provision of services which influence land development in the County. Such a policy should set forth responsibility for services and factors to be considered in the initiation or extension of such services.

4) The Commissioners should continue the present policy of assessing agricultural and forestland at its agricultural or forest value. The Land Use Plan should be considered as factors in land appraisal and lands designated agricultural or forest in the Plan taxed to offset pressures for encroachment by urban uses.

5) The Commissioners should strongly encourage citizen participation and education in the planning process. A joint Brevard/Transylvania County Planning Board should be established as a representative citizen group involved in the long-range planning process. Responsibility for current planning activities, such as subdivision and rezoning review, would lie with the Transylvania County Land Use Board and a revised Brevard Planning Board. This division of responsibilities should permit the City/County

Planning Board to develop more coordinated, effective planning programs.

Regulatory Measures

1) The Commissioners should strengthen enforcement of the Transylvania County Subdivision Ordinance, the Transylvania County Mobile Home Park Ordinance, and the Transylvania County Floodway Zoning Ordinance. The recent completion of county tax maps should assist enforcement of the Subdivision Ordinance and the Mobile Home Park Ordinance by enabling the Joint Department of Inspections to discover unapproved subdivisions and mobile home parks prior to the issuance of building permits. Continued cooperation among the Department of Inspections, the County Sanitarian, and the professional planning staff will improve enforcement of these ordinances.

2) The County Commissioners and the County Planning Board should investigate measures for regulating land use. Major developments, such as shopping centers, multi-family complexes, and industries have direct influence on neighboring property and should be regulated more closely than uses such as single-family homes. Alternative regulatory measures to control these developments in conformance with the Land Use Plan include performance standards, a zoning ordinance, or a combination of methods.

3) The Commissioners should continue efforts to improve enforcement of the North Carolina State Building Code and associated construction codes through the Joint Department of Inspections. Stronger efforts should be made towards the condemnation and demolition of vacant substandard buildings in the County. These buildings constitute a health and safety hazard to residents of the County as well as being visual blight.

4) The Commissioners should initiate a program of housing rehabilitation to assist owners of substandard dwellings in receiving funds to bring homes up to standard condition. Such a program would help to preserve existing residential areas and prevent premature conversion to other uses or abandonment.

5) The County Commissioners should emphasize stronger enforcement of the Transylvania County Environmental Policy Ordinance and Transylvania County Soil Erosion and Sedimentation Control Ordinance. Local expertise through the hiring of qualified staff or training of current staff in the area of

erosion and sedimentation control is needed to augment the enforcement effort.

Brevard Planning Jurisdiction - The City of Brevard Board of Aldermen should review policy and regulatory measures for effectively implementing the Land Use Plan within the Brevard Planning Jurisdiction.

Policy Measures

1) The Board of Aldermen should formally adopt the Land Use Plan as the official City growth policy.

2) The Board of Aldermen should undertake development of a Public Improvement Strategy to identify needed capital improvement projects and to schedule these projects in accordance with the City's financial capabilities and the Land Use Plan.

3) The Board of Aldermen should develop a Utility Extension Policy which is closely coordinated with the Land Use Plan and the Public Investment Strategy to encourage development in conformance with the Plan.

4) The Board of Aldermen should encourage citizen participation and education in the planning process. A joint Brevard/Transylvania County Planning Board should be established as a representative group involved in the long-range planning process. Responsibility for current planning activities, such as subdivision and rezoning review, would be with the Transylvania County Land Use Board and a revised Brevard Planning Board. This division of responsibilities should permit the City/County Planning Board to develop more coordinated, effective planning programs.

Regulatory Measures

1) The Brevard Planning and Zoning Board and the Board of Aldermen should review and revise the City of Brevard Subdivision Regulations to provide for appropriate development standards and enforcement measures.

2) The Board of Aldermen should adopt a revised zoning ordinance and zoning map based on the Land Use Plan for the City of Brevard and its Area of Extraterritorial Jurisdiction.

3) The Board of Aldermen should continue efforts to improve enforcement of the North Carolina State Building Code and associated construction codes through the Joint Department of Inspections.

4) The Board of Aldermen should review the adopted Southern Standard Housing Code, which sets minimum standards for existing dwellings. A more coordinated program of housing code enforcement sould be undertaken by the Joint Department of Inspection. Primary emphasis should be placed on demolition of dilapidated structures to eliminate blight and improve neighborhood quality. The Aldermen should establish a housing rehabilitation program to assist owners of substandard dwellings in receiving funds to bring their homes up to standard conditions.

Summary

The Transylvania County Board of Commissioners and the City of Brevard Board of Aldermen should undertake a wide range of policy and regulatory measures to implement the Land Use Plan. Foremost among these recommendations is that the provision for and education about the planning process should be the foundation for the use of regulatory measures.

The Brevard/Transylvania Land Use Plan has involved the establishment of basic planning and development goals and the gathering of an inventory of data regarding environment conditions, population and economic characteristics, transportation facilities, water and wastewater treatment facilities, and existing land use. This data was analyzed and used to recommend future land use patterns. Policies to direct growth towards meeting the development goals have been identified to be followed in conjunction with the specific recommendations for future land use patterns.

APPENDIX A

EXISTING LAND USE CLASSIFICATION SYSTEM

01 Urban and Built-up - Urban and Built-up Land comprises areas of intensive use with much of the land covered by structures. Included in this category are cities, towns, villages, strip developments along highways, transportation, power, and communications facilities, and such isolated units as mills, mines, and quarries, shopping centers, and institutions.

- 01-01 Residential
  - -011 Single-family dwelling (T for mobile home on individual lot)
  - -012 Duplex
  - -013 Multi-family dwelling (3 or more units)
  - -014 Group dwelling-dormitories, boarding houses
  - -015 Mobile Home Park (3 or more mobile homes on a piece of property)
- 01-02 Commercial and Service -

  Commercial areas are those used predominantly for the sale of products and services. They are often abutted by residential, agricultural, or other contrasting uses which help define them. The principal components of the Commercial-use category are urban central business districts; shopping centers, usually in suburban and outlying areas; commercial strip developments along major highways and access routes to cities; and resorts. The main buildings, secondary-structures, and areas supporting the basic use are all included - office buildings, warehouses, driveways, sheds, parking lots, landscaped areas, and waste-disposal areas.

  - -021 Commercial
    - -0211 Retail Commercial - Sales of finished products to consumer
    - -0212 Wholesale Commercial - Sales of merchandise to retail distributor.
  - -022 Services
    - -0221 Business and professional services (other than medical) - lawyers, architect, travel agencies, finance and insurance
    - -0222 Personal services - beauty and barber shops

-0223 Medical services - doctor, dentist, clinics
-0224 Repair services - shoe repair, appliance repair
-0225 Contract construction services - building electrical, heating and air conditioning
-0226 Specialized educational services (trade schools) - dance schools, barber colleges, business colleges; day care and private kindergartens (when not located in religious complex or school)
-0227 Motel services - motels, hotels, travel trailer parks, campgrounds
-0228 Other services

01-03 Inudstrial - Industrial areas include a wide array of uses from light manufacturing and industrial parks to heavy manufacturing plants.

-031 Warehousing - Storage buildings for raw materials,
-031 parts, and completed goods awaiting transfer.
-032 Light Industrial Uses -
-032 Identification of light industries - those focused on design, products can often be based on the type of building, parking, and shipping arrangements. Light industrial areas may be, but are not necessarily, directly in contact with urban areas; many are now found at airports or in relatively open country.
-033 Heavy Industrial Uses -
-033 Heavy industries use raw materials such as iron ore, lumber, or coal. Included are steel mills, pulp or lumber mills, electric power generating stations, oil refineries and tank farms, chemical plants and brick refineries and tank farms, chemical plants and brickmaking plants. Stock piles of raw materials, large power sources, and waste product disposal areas are usually visible, along with transportation facilities capable of handling heavy materials.

01-04 Resource Extraction - Resource Extraction encompasses both surface and subsurface mining operations, such as sand and gravel pits, stone quarries, oil and gas wells, and metallic and nonmetallic mines. In size, these activities range from the unmistakable giant strip or pit mines covering vast areas to the unidentifiable gas wells less than a foot square.

-041 Sand
-042 Gravel
-043 Rock
-044 Dirt
-045 Other

01-05 Transportation, Communication, and Utilities

-051 Railroad - Rail facilities include stations, parking lots, roundhouses, repair and switching yards, and related areas.
-052 Motor freight - Motor freight facilities include truck terminals and related areas.
-053 Air transportation - Airport facilities include the runways, intervening land, terminals, service buildings, navigation aids, fuel storage, parking lots, and a limited buffer zone. The perimeter fence around airports usually makes a very sharp boundary.
-054 Highway and Street Right-of-Way - The highways include areas used for interchanges, limited access and right-of-way.
-055 Automobile Parking - Automobile parking category includes only parcels of land where parking is the dominant use, not accessory to other uses such as retail shopping.
-056 Communications - Communications include facilities for production, such as newspaper plants, and radio stations; facilities for transmission, such as radio and television towers; and business offices.
-057 Utilities - Utilities include facilities of municipal utilities, such as water and sewage treatment plants; and of private companies, such as electrical power substation and gas pipelines, and the business offices for such utilities.
-058 Other

01-06 Institutions and Governmental Facilities - Education, religious, health, correctional and military facilities are the main components of this category. All buildings, grounds, and parking lots that compose the facility are included within the institutional unit, but areas not specifically related to the purpose of the institution should be placed in the appropriate category.

-061 Schools
    -0611 Elementary
    -0612 Secondary
    -0613 Technical Institutes
    -0614 Colleges and Universities
-062 Religious Complex - Church buildings, associated education buildings and rectory and/or convents
-063 Cemetery
-064 Hospital and extended care facilities - nursing homes
-065 Governmental Offices
-066 Law enforcement and detention facilities - jails, offices
-067 Civic and community organizations
-068 Other

01-07 Cultural, Entertainment, and Recreation - Cultural, Entertainment and Recreation facilities offer leisure activities which may include activities considered to be the result of development of the best qualities of man's mental nature (cultural); activities where there are enjoyable mental occupations (entertainment); and activities which involve physical exercise (recreation).

-071 Cultural Facilities - libraries, museums, art galleries, historical sites, music center, auditorium, civic centers
-072 Entertainment Facilities - movie theatres, sports stadiums
-073 Recreation Facilities - golf courses, swimming pools, parks, playgrounds, tennis courts, group camps
-074 Other Facilities

02 Clustered Development - The Clustered Development category includes developments along transportation routes and the small communities, and isolated built-up areas where separate land uses cannot be segregated. Residential, commercial, industrial, institutional, and occasionally other land uses may be included. Farmsteads intermixed with strip or cluster settlements will be included within the built-up land, but other agricultural land uses should be excluded. The minimum size of a clustered development would be five residences or other uses within a distance of .25 miles to form the core with other structures within .1 miles.

03 Agriculture and Open Land - Agricultural Land may be broadly defined as land used primarily for production of farm commodities.

03-01 Cropland and Pasture
-011 Cropland
-012 Pasture

03-02 Orchards, Groves, Vineyards
03-03 Feeding Operations
03-04 Abandoned Agricultural Land
03-05 Other Agriculture Lands

04 Forest Lands - Forest lands are lands that are covered by trees capable of producing timber or other wood products and exert an influence on the climate or water regime.

04-01 Deciduous Forest Land - Deciduous Forest Land includes all forested areas in which the trees are predominantly those from which the leaves fall at the end of the growing period. In Region B these would be the hardwoods, such as oak, sugar maple, beech, birch, hickory, basswood, silverbell, and the "soft hardwoods" such as sweet gum, and yellow poplar.

04-02 Evergreen Forest Land - Evergreen Forest Land includes all forested areas in which the trees are predominantly those which remain green throughout the year. The coniferous evergreens are commonly referred to or classified as softwoods. They include such eastern species as the longleaf, slash, shortleaf, loblolly, and other southern yellow pines; spruce and balsam fir; white and red pines; jack pine; hemlock; and cypress.

04-03 Mixed Forest Land - Mixed Forest Land includes all forested areas where both evergreen and deciduous trees are growing and neither predominates.

04-04 Forest Grasslands and Balds - Forest Grasslands and Balds include areas from which all trees have been removed as well as naturally-occurring balds.

05 Water

05-01 Streams and Waterways (including floodways, but not flood fringe areas)
05-02 Lakes
05-03 Reservoirs
05-04 Fisheries
05-05 Others

APPENDIX B

ENVIRONMENTAL ASSESSMENT

1. Abstract

This document is a land use plan for the City of Brevard and Transylvania County, North Carolina. The document presents a plan for orderly growth through a twenty-year planning period. The Land Use Plan was formulated through a process which began with the formulation of planning and development goals. Data was collected and analyzed regarding the physical characteristics, population and economic characteristics, transportation facilities, water and wastewater treatment facilities and existing land use patterns. Projections of future population and employment and future expansion of public facilities were made to establish future land use requirements and appropriate densities. Future land use patterns were then developed to provide for orderly growth and the most appropriate use of land.

2. Environmental Effects

The following effects on the environment can be reasonably expected as a result of implementing the plan.

a. Water Resources Impacts With the recommended enforcement of federal, state, and local controls which are designed to prevent deterioration of water quality, impacts on water resources should be minimal. Construction may cause some temporary adverse effects. The designation of areas for conservation should protect some water resources from incompatible development.

b. Land Use Impacts Patterns of land use should develop in a manner which will protect environmentally fragile areas and channel development into areas where required facilities are available. Incompatible land uses will be buffered from each other. Growth will occur in an orderly manner and federal, state, and local ordinances will be followed.

c. Wildlife and Marine Resources Impacts Implementation of the plan will insure that some natural areas will be preserved and wildlife protected. However, anticipated urban growth will displace some wildlife.

d. Solid Waste Impacts The patterns of development set forth in the Land Use Plan should not have any adverse solid waste impacts. The population growth expected through the twenty-year planning period will increase the amount of solid waste generated, but control of development will help assure that such waste is disposed of in accordance with the regulations of the Health Department.

e. Air Pollution and Noise Impacts Implementation of the plan will not have any adverse air pollution or noise impacts. The orderly growth and development of the County should provide for buffer areas around any noise generators. Future air pollution will be controlled by federal and state laws.

f. Socio-Economic Impacts The Land Use Plan should have positive socio-economic impacts on the County by encouraging development in appropriate areas so as to provide public services more efficiently. Existing neighborhoods, businesses, and institutions will generally be protected from incompatible land uses. The preservation of natural areas will maintain tourist business in the County.

3. Adverse Environmental Effects

Continued growth and development in the County will have some adverse environmental effects as land is committed to urban uses. However, the Land Use Plan will protect areas of environmental concern and will channel development into suitable areas.

4. Alternatives

The alternative to the Land Use Plan would be no plan at all, which is the present situation. This alternative leaves the residents in a situation of reacting to a crisis after the damage has been done. Once a problem has occurred and the environment has been harmed, federal, state, and local laws are enforced where feasible. Fragile areas may never be restored after the damage has been done.

With no effort to channel development into appropriate areas, scattered strip development will continue. This type of development consumes large amounts of land, inhibits the traffic-carrying capacity of thoroughfares, and is expensive to provide services for.

5. The Relationship Between Local Short-Term Uses of Man's Environments and the Maintenance and Enhancement of Long-Term Productivity

The short-term use of the local environment would be considerably outweighed by the productivity and enhancement of the long-term environment through the use of certain areas for agriculture and conservation of other areas. Areas of critical environmental concern such as wildlife habitats and aquifers would be preserved against incompatible developments which adversely affect the continued long-term productivity of these areas.

6. Irreversible and Irretrievable Commitments of Resources Which Would Be Involved if the Proposed Plan is Implemented.

The major commitment of resources will be the land removed from agricultural or forestry uses. This commitment of land will occur due to increased demand for residential, commercial, and industrial property. Implementation of the Plan will help to minimize the amount of land committed to urban purposes by focusing development into suitable areas.

7. Federal, State, and Local Environmental Controls

All existing federal, state, and local environmental controls will be applicable to the plan elements. These will include:

The National Environmental Policy Act of 1969
The North Carolina Environmental Policy Act of 1971
The North Carolina Sedimentation Pollution Control Act of 1973
The Transylvania County Environmental Policy Ordinance
The Transylvania County Floodplain Zoning Ordinance
The Transylvania County Mobile Home Park Ordinance
The Transylvania County Soil Erosion and Sedimentation Control Ordinance
The Transylvania County Subdivision Ordinance
The City of Brevard Soil Erosion and Sedimentation Control Ordinance
The City of Brevard Subdivision Ordinance
The City of Brevard Zoning Ordinance